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BELDING and MULL

Hand Book

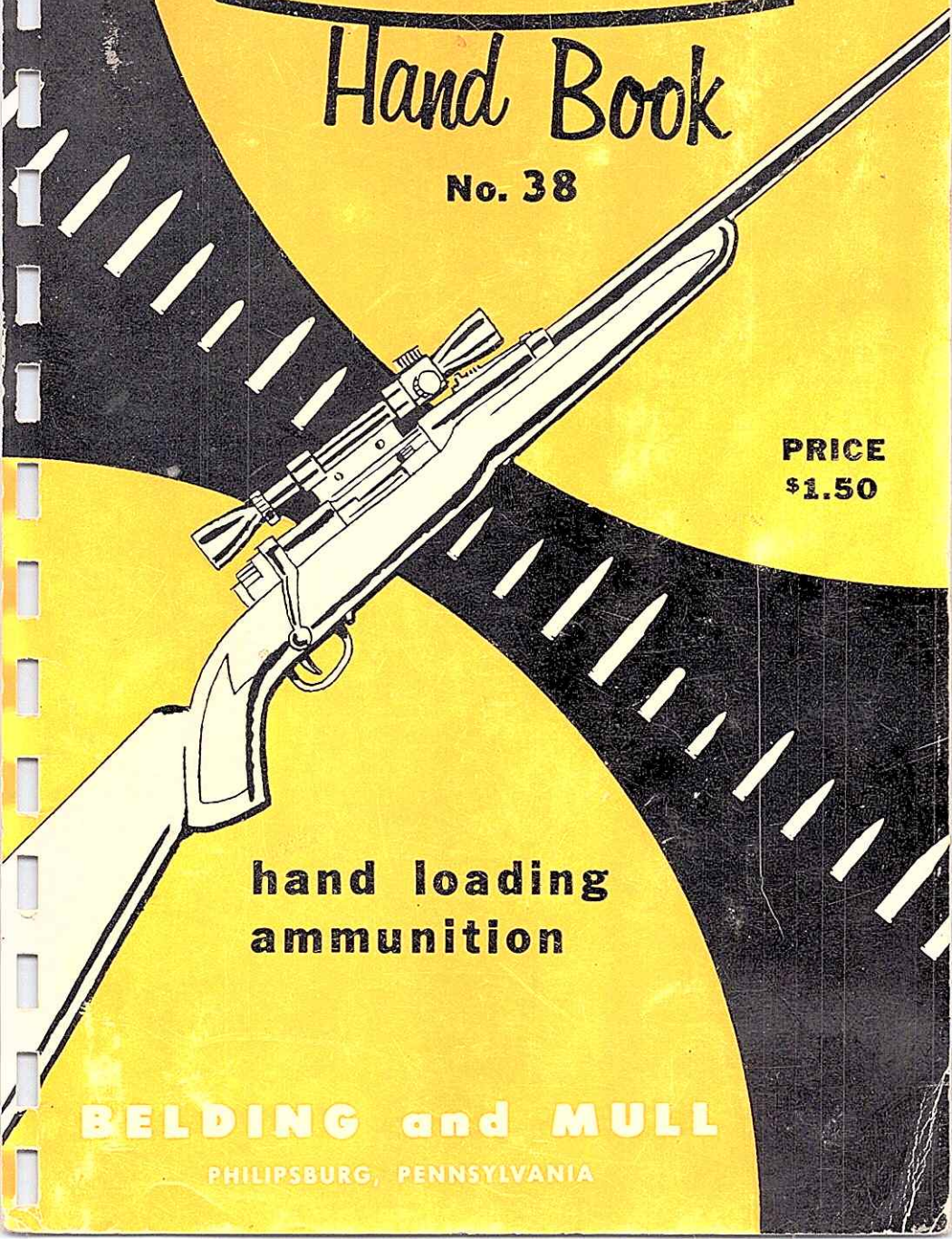
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**hand loading
ammunition**

BELDING and MULL

PHILIPSBURG, PENNSYLVANIA



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The
BELDING & MULL
HANDBOOK



Containing Complete Instructions For
HANDLOADING AND RELOADING OF
AMMUNITION FOR REVOLVERS,
PISTOLS, RIFLES, SHOTGUNS



A CATALOG OF B. & M. RELOADING
TOOLS, RELOADER'S SUPPLIES



PUBLISHED BY

BELDING & MULL

1959

100 N. 4th St.
Philipsburg

Centre County

Pennsylvania

F O R E W O R D

*M*OST rifle and revolver shooters find the comparatively high cost of commercial ammunition definitely curtails the full enjoyment of their favorite sport. In this Handbook we have endeavored to explain in a thorough, yet comprehensive manner, how, by reloading, to obtain economically the finest ammunition available. The material has been compiled with great care, unduly technical phrases having been omitted so that the beginner may not be confused. We believe, however, that the advanced hand-loader will find in the pages following many helpful practical suggestions and we trust the tables and other technical data may supply information that will prove valuable. Questions on this subject may from time to time arise upon which the reloader will desire additional information. Should a problem develop, we hope you will write us and explain in detail your difficulty. Your inquiry will receive our immediate and careful attention and there is, of course, no charge or obligation for this service.

BELDING & MULL

100 N. 4th St.
Philipsburg, Pennsylvania

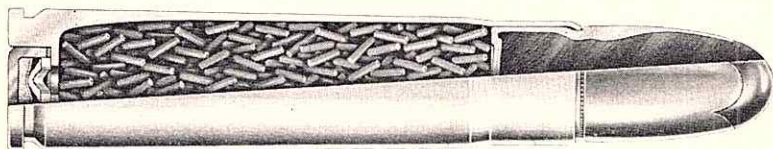
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WHY RELOAD?

There are numerous reasons why the handloading and reloading of cartridges for center-fire rifles and revolvers is well worthwhile. Among these may be mentioned economy, improved accuracy, and the wide variety of available loads.



Economy

The subject of economy is of prime interest to most shooters. Authorities state that, to become thoroughly familiar with an arm, you should fire hundreds of rounds yearly—many say at least one thousand—and ammunition for the larger calibers costs from twelve to twenty-two cents per pound. It matters little what the number may be for it would vary with the individual. The pertinent fact is that few possess the means to do a fraction of the shooting they really would like to do. For those then who desire to enjoy more shooting with the most accurate ammunition at the minimum cost, we recommend reloading.

Upon firing a loaded cartridge, there remains the empty cartridge case practically as good as new and representing often more than half of the cost of the original cartridge. Primers, Powder and Bullets are easily replaced in the fired cases with a set of good Reloading Tools. The cost of these components, even for the duplication of high powered factory loads, is surprisingly low and represents but a fraction of the price of the factory product. Reduced loads, obtainable only by handloading, are recommended by all authorities for their exceptional accuracy. They are admirably suited for all small game and short range target shooting and may be had at a cost approximating that of rim-fire ammunition of the 22 caliber class.

A reduced load uses but a small charge of powder and usually a cast bullet. These bullets may be purchased or made quickly and easily by the reloader. High power loads with jacketed bullets tend to destroy rapidly the accuracy of a fine barrel, but the reloader, using reduced loads will probably never have to replace his barrel, for with proper care it will last almost indefinitely.

Below you will find a table which shows fairly the approximate cost of factory and handloaded ammunition for several calibers. Line No. 1 is the price of one hundred rounds of standard factory ammunition. Line No. 2 is the cost of duplicating the factory product by reloading the fired case. In line No. 3 is found the cost of reduced loads when the bullets are cast by the reloader. Handloaders using the popular Sierra, Hornady, Speer etc. makes of bullets obtain full and medium power rifle loads at figures of from \$1.50 to \$2.00 less per 100 than those shown in line 2.

CALIBER	30-06	257 Roberts	243 Win.	220 Swift	222 Rem.	38 Special
List price factory load, per 100	\$22.75	\$21.25	\$20.50	\$18.50	\$14.00	\$8.80
Reloaded using fired cases to duplicate factory loads	10.42	8.60	8.51	7.78	6.21	5.29
Reloaded with reduced charge and home prepared bullets	2.95	2.23	2.18	1.98	...	1.85

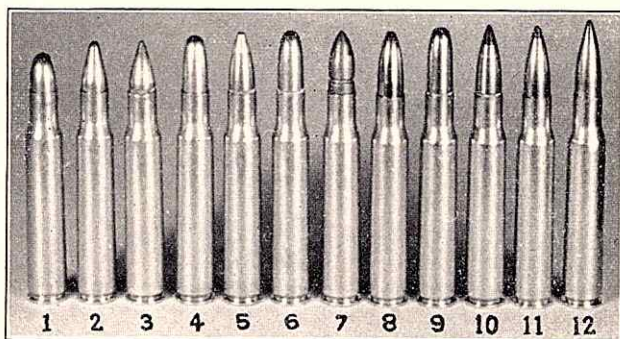
The above costs will vary due to market and transportation charges but they fairly show the truly great saving effected by reloading your ammunition.

Improved Accuracy

Ammunition secured by reloading is more accurate than the average cartridge for various reasons. Factory loaded cartridges must be loaded to a certain definite standard. They must function properly in any arm chambered for them and arms are of many makes and models. The brass cartridge case must be small enough to enter freely the smallest chamber likely to be found. They must also be short enough to allow their use in any action designed to receive them and, finally, they must be loaded so as not to develop pressures which may prove dangerous in old arms no longer manufactured but still in use.

Handloaded cartridges adapted to your individual rifle or handgun will be found more accurate than the average run of ammunition because they were reloaded for your firearm and are not makeshifts for any gun that happens to be of the same caliber. Cartridge cases once fired with full power loads expand to fit exactly the chamber of the arm in which they were fired. A bullet carefully seated in an expanded case will be centered when placed in the chamber. This perfect centering tends to

Variety of Loads



SPRINGFIELD 30 CALIBER MODEL 1906

1. 30 Luger, 93 gr. SP, Norma, high velocity varmint load.
2. 110 gr. Hornady, high velocity varmint load.
3. 110 gr. Winchester SP, high velocity varmint load.
4. 180 gr. Hornady Rd. Nose SP, popular big game load.
5. 150 gr. Winchester ST, excellent deer load.
6. 180 gr. Remington SPCL, popular big game load.
7. 169 gr. lead gas check Squibb, accurate short and medium range target load.
8. 150 gr. Jordan OP., popular white-tail deer load.
9. 220 gr. Remington CL OP., for largest North American game.
10. 150 gr. Remington BPt. excellent deer and black bear load.
11. 150 gr. Sierra SP., excellent deer and black bear load.
12. 180 gr. Sierra Match King FJ Bt. target load.

increase the accuracy. The over-all length of the cartridge is important. For best accuracy the forward section of the bullet, when the cartridge is chambered, should nearly touch the rifling. Factory ammunition is of a standard length but the reloader may vary the depth of seating the bullet in the cartridge case to fit perfectly his particular arm. Superior results are bound to accrue.

It is interesting but true that, when factory ammunition only is fired, the greatest accuracy of a particular arm is usually unknown to its user. The reason is that supposedly identical arms are in reality not identical and the bullet and powder charge which proves best in one will not be the most accurate in the other.

The handloader has at his control a choice of bullets, powder and powder charges and primers, and by experimenting along lines suggested further on in this Handbook can develop cartridges which will be the most accurate for his arm. These facts indicate that improvement is possible in the matter of assembling ammunition for your particular rifle or handgun. You can obtain this superior ammunition by reloading.

Every real shooter is proud of a fine arm but the pleasure derived from it depends largely upon use. If the shooter does not reload he has available only such ammunition as is furnished by cartridge companies. This loaded ammunition, especially for the larger calibers, was designed primarily for big game shooting. It is too powerful for use in settled communities and if used on small game will blow it to pieces. The recoil from it is excessive and a good barrel will be worn out after firing from five hundred to five thousand rounds. The handloader can produce for his high powered arm, ammunition especially adapted for each of his many shooting requirements. High power loads duplicating the factory product, extremely accurate long range target loads using full jacketed target bullets and progressive burning powders, highly accurate target and game loads for ranges up to six hundred yards using lead bullets fitted with gas checks and a medium charge of smokeless powder, and super accurate target and small game loads using a light charge of similar powders are all easily and uniformly assembled with a set of good reloading tools. From the foregoing it may readily be seen that the reloader has available a variety of highly desirable loads, the use of which greatly increases the service, interest and pleasure that can be derived from his favorite arm. Reloading so adds to the capabilities of the high powered rifle that its owner has in fact that truly all purpose arm about which so much has been written.

Every Shooter Should Reload

From the foregoing it might seem that handloading is a technical and tedious process. Happily, however, such is not the case. The excellent design of modern reloading equipment, the operation of which is fully explained in the following text, makes reloading a simple and surprisingly rapid practice. Anyone, whether he has knowledge of reloading or not, can, by following instructions and suggestions contained in this Handbook quickly and easily assemble standard full power loads, any of the highly desirable reduced loads, or special loads for his arms with the assurance that his reloaded ammunition will be equal in every respect to that which he has bought and in most instances he will find it superior.

The ease and accuracy with which an abundant supply of excellent ammunition can be assembled delight the beginner. As knowledge of the practice increases, interest in the components and analysis of the results obtained point the way to study of the science of ballistics. The composition and characteristics of the materials used, how a bullet acts and why it does so are subjects of major interest capable of limitless expansion. The experienced handloader will freely admit that loading his own ammunition is more than half the fun of shooting. It is a fascinating and instructive hobby that appeals to every real shooter.

Reloading equipment is a practical investment. An individual who does a reasonable amount of shooting will save on his ammunition bill in one season alone a sum sufficient to offset the cost of his reloading equipment. Frequently several individuals will find it convenient to purchase a set of tools for the group, thus distributing the initial cost so that it will be no higher than the price of a few boxes of loaded cartridges. Hundreds of Rifle, Pistol and Police Clubs have purchased one set of tools for the Organization and used them to reload many different calibers. Dies for tools may be had in practically all calibers and used with one tool, thus it is entirely practical and economical for a group to purchase equipment with additional

dies for reloading the several desired calibers. If you will advise us as to the calibers you desire to reload we shall be pleased to furnish a list of the parts required for multi-caliber reloading and quotations on such outfits.

On page 10 is a list of the B. & M. tools required for reloading various types of ammunition and further on will be found a description of other makes of tools, the service they perform and complete directions for operating. A careful reading of these pages will thoroughly instruct you on how to reload. Assuming that you now understand the mechanics of handloading there will arise some question as to what to reload. "What primer, powder and charge, and what bullet shall I use?" will be problems requiring suggestions and recommendations for their solution. The primer question is easily settled. You should use a non-mercuric type of the proper size. On page 76 you will find a table listing the proper size of primers for the most popular rifle and revolver cartridges. If the caliber for which you desire to reload is not listed, advise us and we will recommend the correct primer. The question of what powder and powder charge and the proper bullet, is not, however, so easily settled since these depend largely upon the type of shooting you intend to do.

Beginning on page 30 is a general article on the characteristics and use of powders. From it you will learn the proper powder to use for your specific type of shooting. The quantity depends upon the type of load desired and the bullet selected and this leads us to the question of bullets which is perhaps the most fascinating phase of handloading.

There are many different kinds, sizes, shapes and weights of bullets but the reloader should not let the variety confuse him. On page 42 is a discussion of the characteristics and uses of the various designs of jacketed and lead bullets. A careful reading of this article should not only acquaint you with the subject of bullets but will suggest a type suited to your needs. If you select a jacketed bullet it is a simple matter to order one of the proper caliber, weight and design from the table on page 76. If your choice is a solid bullet you should look over carefully the "Cast Bullet" section of this Handbook which lists and thoroughly describes a large number of lead bullets. Each of these bullet designs was developed by an expert and is recommended unqualifiedly. Having now selected a primer, powder and bullet you will desire to know how much of the chosen powder should be used behind a bullet of the weight selected. This information is easily obtained because there is included in this Handbook a table of loads with bullets of various makes and recommended powder charges.

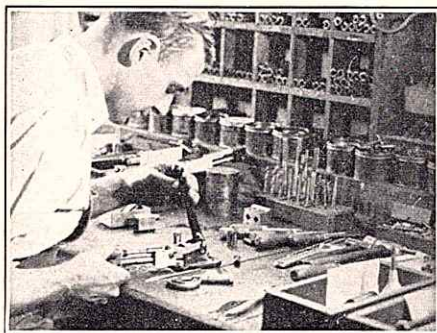
There are available today many excellent books on arms and ammunition which provide a large and complete source of information which you, as a reloader, as you progress in the development of super-accurate ammunition for your arm, will find valuable. See pages 101 and 102 for latest volumes available.

Reloading is not only the practical and economical way to obtain the most accurate cartridge for and the greatest service from an arm but it will so increase your interest and enjoyment in shooting that you will agree with thousands of others "that shooting is the King of all Sports."

Belding and Mull maintain a technical department which is ever ready to discuss, without obligation, any problem on handloading which may arise. We hope our customers will feel free to use this service. It matters not how trivial or important the subject may seem, we are always glad to co-operate and in so doing there is available to you experienced counsel on firearms and ammunition. We carry a complete stock of Primers, Primed Cases, Jacketed Bullets, Powders, and all the items a reloader needs and provide unexcelled delivery service. This feature makes it possible for the shooter to secure all his supplies which are manufactured by any of the American cartridge or powder manufacturers from this one source, thus effecting an important saving in shipping charges.

Belding & Mull Straightline Reloading Equipment

Belding and Mull Reloading Tools are designed and manufactured to meet the demand of the modern shooter for superior reloading equipment. In these tools all forces are applied in an absolutely straight line—true to the axis of the case. There is no tendency for the case to cant or wobble. Case necks are resized and the bullet seated with the utmost precision and accuracy.



Each B. & M. Tool must, before shipment, successfully pass a final rigid inspection.

Along with this major improvement in handloading tools there are incorporated many additional refinements. The priming punch has a face concaved to seat primers without marking them and its travel is regulated with mechanical precision to press the primer home to the bottom of the case pocket. The force required to resize case necks properly is obtained by a stout handle and ample leverage. The B. & M. tool has several times the power of older tools and with it neck resizing is easily and quickly accomplished.

The method of holding the case has likewise been improved. Whether rim or rimless, they are held in the sliding cradle (part No. 3) by half their entire circumference. This half circumference hold is ample for the work. Cases can neither slip nor receive cut or distorted rims. In resizing case necks and bullet seating it is important that the tool provide a solid support for the case head with a wall absolutely square to the case axis. This is accomplished by the proper design and careful machining of B. & M. sliding cradles. All parts are ruggedly constructed of the materials best suited for the work required of them. Neck dies and expanding plugs are made of tool steel and hardened so that their accuracy is retained nearly indefinitely. To meet the rigid inspection requirements the machining must be accurate within extremely fine tolerances and the parts assembled with the utmost care. We might continue at great length enumerating the many smaller improvements in design and refinements in the construction of these precision tools which tend to increase the ease with which ammunition is assembled and guarantee its accuracy and uniformity. Let it suffice that the tools are properly designed and of such mechanical excellence that they receive the highest praise of all experienced handloaders.

Our policy is to make reloading equipment that is so perfect in design, so sound in purpose, and so indispensable in use as to be well above competition.

What B. & M. Tools are Needed to Reload Center-Fire Cartridges

Handloaders may be roughly divided into two classes, those who purchase their bullets ready to load and others who prefer to cast a large share of their supply.

Having bullets available the following list of B. & M. Reloading Tools includes all that is required to assemble cartridges for use in any **single shot or bolt action arm**.

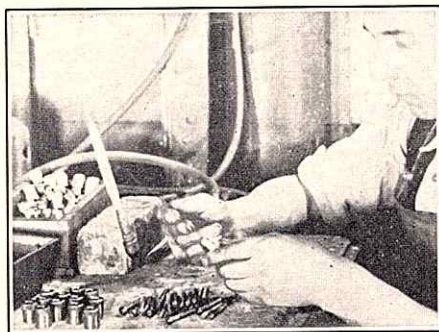
- 1—B. & M. Model 28 Improved Reloading Tool.
- 1—B. & M. Visible Powder Measure.
- 1—B. & M. Loading Funnel.
- 1—Pair Loading Blocks.

Material—Empty cartridge cases, primers, powder, and jacketed or cast bullets, the latter sized and lubricated.

To reload for any center-fire rifle which requires the crimping of the bullet in case or for any center-fire revolver that is to be used other than as a single shot, the following B. & M. Reloading Tools are required.

- 1—B. & M. Model 28 Improved Reloading Tool less Bullet Seating Parts.
- 1—B. & M. Model 26 Bullet Seater.
- 1—B. & M. Visible Powder Measure.
- 1—B. & M. Loading Funnel.
- 1—B. & M. Rubber Mallet.
- 1—Pair Loading Blocks.

Material—Same as above.



Hardening B. & M. Tool Steel Neck Dies
and Expanding Plugs.

Rifles for which cartridges must be crimped if used as repeaters are the Remington Slide Actions, Winchester Lever Actions, or any other rifle in which the cartridges are inserted into a tubular magazine. Cartridges for use in revolvers and pistols should be crimped if the arm is to be used as a repeater.

For the second class, those who prefer to cast their own bullets (so that a still greater saving may be effected on the ammunition bill) add to either of the above lists of B. & M. Tools the following items—

- 1—or more Bullet Moulds, single or double cavity.
- 1—B. & M. Bullet Sizer.
- 1—B. & M. Cake Cutter.
- 1—B. & M. Melting Pot.
- 1—B. & M. Iron Dipper.
- Bullet Lubricant.

Material—Bullet metal and, for some cast bullet designs, Gas Check Cups.

In many instances, when only reduced loads are to be assembled and exceptional accuracy is not required, a powder dip or scoop may be substituted for a B. & M. Visible Powder Measure.

Safety

We have often been asked whether the practice of handloading ammunition is dangerous. It most decidedly is not. We know of no accidents that were not due entirely to defective arms or extreme carelessness. Handloading ammunition does require ordinary care but if the reloader will read the instructions contained in this Handbook carefully before commencing to reload, the practice is perfectly safe. Certain precautions must be observed:

1. Do not smoke while reloading.
2. Do not manipulate reloading tools so as to give a sharp or heavy blow to any primer. Primers normally will not explode from pressure alone. Needless to say handloaders should not attempt to prime cartridge cases which contain a powder charge.
3. When loading powder into cartridge cases be extremely careful not to put two charges into one cartridge case. Many cartridge cases in use to-day were originally designed for black powder and will easily accept a double charge of some smokeless powders. After all cases have been charged examine each of them closely before seating bullets. Charges which may prove dangerous can be detected in this manner.
4. Do not use charges of powder in excess of the maximum charges appearing in this Handbook. Charges considerably less than the maximum should be used at the start. Never exceed a recommended maximum charge.
5. Many cartridge companies are using or have used in the past, a primer (mercuric) which upon firing gives forth a substance that combines with the brass case causing it to become brittle. We therefore caution handloaders not to use cases of unknown quality for reloading purposes. We advise the purchase of new, empty, unprimed cartridge cases and the use of only the latest approved non-mercuric type of primer.
6. Before reloading, cartridge cases should be examined closely for defects. Particular attention should be given to their bases. Cracks are easily detected because the escaping gas blackens the exterior of the shell case around the point at which the leak occurs. A cracked shell case must not be reloaded.
7. Do not continue to fire a lot of cartridges which show signs of developing dangerous pressures. Indications of excessive pressures are undue recoil, difficult extraction of the fired cartridge case, pierced primers or longitudinal streaks appearing on the body of the fired cartridge case. Watch for these indications. Should any be noted, firing should cease and the cause be determined and corrected.

The Selection and Care of Cartridge Cases

The first models of breech loading firearms were not a success until brass cartridge cases were perfected. The combination of gun and cartridge case, prior to the development of the brass cartridge case, permitted an escape of gas rearward which was disconcerting to the firer and resulted in a loss of power and uniformity of results. The introduction of the brass cartridge case solved these difficulties but it still remains that this component is the weakest that the handloader uses since rifle barrels and actions in good mechanical repair will withstand far greater pressures than the cartridge cases which are used in them. It is the purpose of this article to explain the proper selection of cartridge cases and care of them.

Manufacture

Center fire rifle and revolver cartridge cases are manufactured from brass, an alloy consisting of zinc and copper. The percentage of these metals used varies with the manufacturers but usually consists of 68 to 74% of copper and 32 to 26% zinc. One of the properties of brass is, that when cold worked, it becomes harder and more brittle until it finally becomes impossible to work it further. It must then be softened by heating, a process known as annealing. In the manufacture of brass cartridge cases, the alloy is carefully made up and cast into bars of a convenient size which are subsequently passed through rolls and brought to a suitable thickness for the cupping machines which form these sheets into cartridge cases. During these processes it is necessary to anneal the metal several times so that the manufacture can be carried on to completion and the resulting cartridge case will not be too hard or soft. The finished cases are hardest at the base and tend to be softer toward the muzzle. Upon discharge of the loaded cartridge, a properly annealed cartridge case will, without fracturing, expand to and grip the walls of the chamber of the arm and, as the pressure is reduced, will spring back slightly and permit ease of extraction. A case which is too soft will stick in the gun chamber and quite frequently the base will be deformed and the primer pocket enlarged; one too hard is likely to separate either upon firing or extraction. Cartridge cases furnished today are remarkably well made and reloaders seldom experience any difficulty with them.

Care of Cartridge Cases

Fired cartridge cases should be kept in a dry place. Damp cases should be dried at the earliest opportunity. Shell cases should not ordinarily be heated to a temperature greater than can be tolerated by the hand. Therefore, when drying, do not place them on a hot stove top but rather let them dry slowly in a warm but not hot oven with the door open. In reloading, the necks of the fired cases must be resized to properly hold the new bullet. Resizing necessitates working the brass of the case necks. Reloading Tools are designed to keep this working of the brass to a minimum and since passing the necks over the dies will properly resize them, they should not be subjected to this strain more than once for each reloading. Another point to be remembered is that bullets, seated in the case necks, exert pressure on the walls which has a tendency to cause the brass to crystallize and crack. This condition

is known as "season cracking" and is especially noticeable in war ammunition which has been loaded and stored over a considerable length of time. The life of the case can be longer preserved if the ammunition is not loaded until it is needed.

Handloaders frequently ask us "how many times can a cartridge case be re-loaded?" This question cannot be definitely answered but good cases, given the proper care, can be reloaded with full power loads from ten to twelve or more times while if reduced loads are used they may be reloaded from twenty-five to thirty or more times. This estimate is conservative. Many hand loaders report having re-loaded cases fifty or more times.

Cleaning Cartridge Cases

If fired cases are to be stored for any appreciable length of time they may be cleaned to prevent corrosion. An easy and economical method of cleaning them is as follows: remove the fired primers and immerse the cases in a 1% solution of sulphuric acid. The solution of sulphuric acid must be held in a glass or earthenware container. The cases should be immersed in the acid bath for a period of from three to five minutes and then rinsed in clear water. Immediately after rinsing, transfer them to another container in which they can be boiled. This vessel must also contain a sufficient amount of water to keep them immersed. After boiling drain the water and dump the cases on a dry coarse towel and shake vigorously over a hot stove. To insure that the cases are properly dried both inside and outside, dry them as described above under "Care of Cartridge Cases". Do not allow them to overheat as this may cause annealing or softening of the brass. This method of cleaning leaves the cases in a blackened condition but they are thoroughly cleansed and if stored in a dry place, will be preserved from corrosion indefinitely.

NOTE:—When preparing the acid solution referred to above, add the acid slowly to the water while gently stirring the mixture. **Do not introduce water into sulphuric acid.**

"MAKE THIS NATION AGAIN A NATION OF RIFLEMEN"

JOIN THE NATIONAL RIFLE ASSOCIATION

1600 Rhode Island Ave., Washington, D. C.

BENCH REST SHOOTERS ASSOCIATION

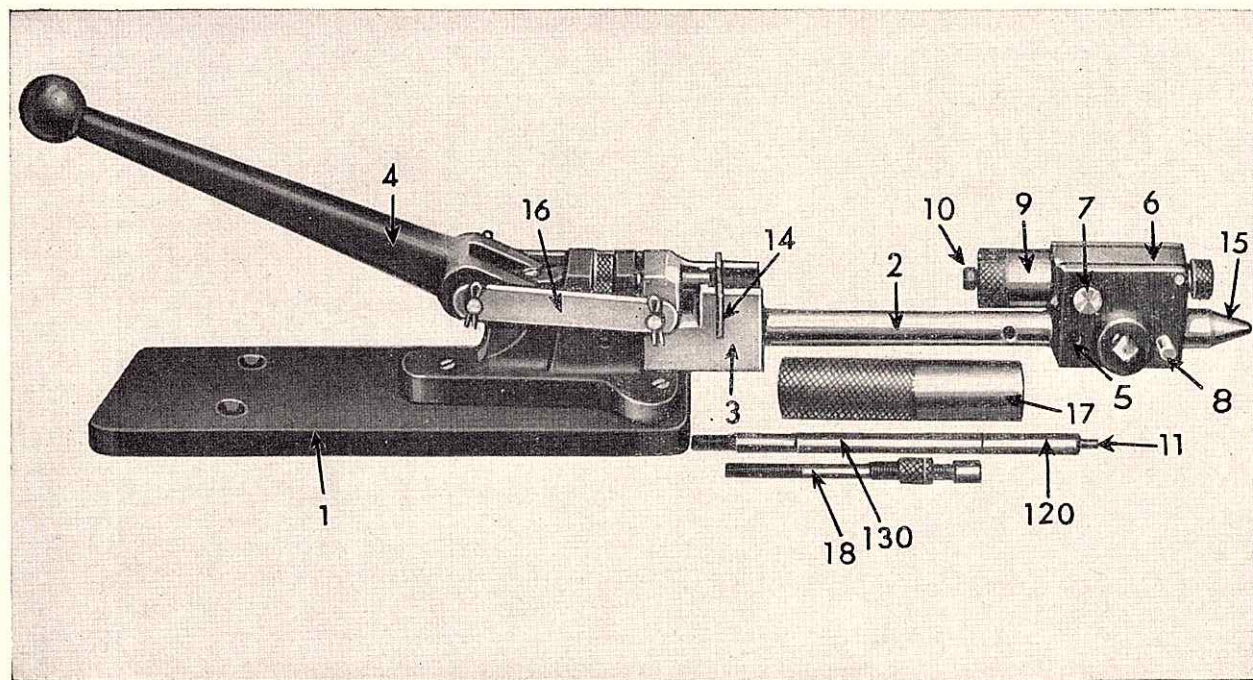
85 Eastern Ave.,

St. Johnsbury, Vt.

THE UNITED STATES REVOLVER ASSOCIATION

5 Oak Street, Springfield, Mass.

*Belding & Mull Reloading Tools are Endorsed
by Prominent Shooters Everywhere.*



Belding & Mull Model 28 Improved Reloading Tool set up for Neck Sizing.

How to Reload With B. & M. Tools

The following operations, in the order of their occurrence, are necessary to reload. The cartridge case (if not a new unfired case) must be decapped and reprimed, the case muzzle resized, charged with a suitable amount of the proper powder and a bullet seated.

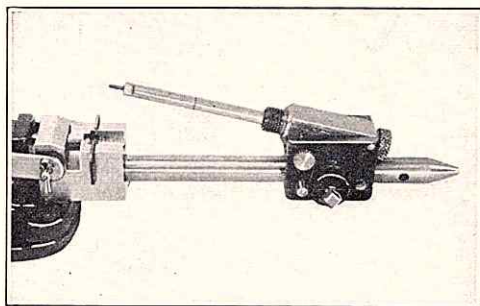
Decapping

To perform the first operation—which is decapping—the set screw (7) is loosened to allow the hinged bar (6) to be raised, and the decapping stem (11) inserted (replacing parts 9 and 10). The head (5) is securely fastened to the half inch rod (2) by the tapered pin (8). If the head is not in the proper position to decap, remove the pin by a light blow from the opposite side, and move the head until the tapered pin can be inserted in the proper hole in the half inch rod. This tapered pin securely fastens and accurately aligns the head to the half inch rod and must always be firmly tapped in place. The empty cartridge case is now slipped over the decapping stem and both dropped into the sliding cradle (14) where they are held centered. As the lever handle (4) is moved forward (be sure the base of the cartridge case is seated in the sliding cradle and the hinged bar is down) the decapping pin enters the primer recess or flash hole and the fired primer is easily pushed out. No large amount of force is required to perform this operation. When added pressure seems to be necessary, the decapping pin may not have entered the primer recess. In such instances, insert the decapping pin in the flash hole before the case is placed in the sliding cradle and thus save the possibility of bending or breaking the decapping pin. The correct use of this attachment is soon learned and seldom do experienced handloaders bend or break B. & M. decapping pins. (Note: the primer is crimped into some cartridge cases, notably those of F. A. make in caliber 30-06. A special punch and base set (Wilson) is required to remove these and the primer recess must be cleared before a new primer can be inserted).

The B. & M. decapper is composed of three parts, the shank (No. 130) collet (No. 120) and pin (No. 11). If a decapping pin is accidentally broken, unscrew the collet from the shank, remove the broken pin and insert a new one.

Repriming

To replace the fired primer with a new one, the lever handle is drawn backward until the decapping pin is withdrawn from the primer recess and the priming punch approaches the case head. The new primer is now dropped into the slot behind the



Improved Reloading Tool Set up for Decapping.

case head and the backward stroke of the handle completed. The priming punch is adjustable, by the large knurled nut to regulate the seating depth and to place the

primer precisely on the bottom of its pocket. Primers of the correct size seat easily and should fit snugly in the pocket provided for them. They should be seated to a depth slightly below the level of the cartridge case head. If allowed to protrude above this level, the bolt head of the arm may strike them during the act of closing the action and may thus fire the cartridge prematurely.

Resizing Case Necks

The necks of fired cases usually need to be resized before they will accept and hold another bullet. In resizing, the decapping stem is removed and the neck die (9) and expanding plug (10) are attached as shown in the illustration. The hinged bar (6) should be locked down by tightening the set screw (7). The outside of the case necks should be slightly oiled to facilitate this operation and also to reduce wear on the dies. The proper amount of oil may easily be applied by touching the outside of the case necks with a mildly oily rag. Care must be observed not to allow oil to get inside the powder chamber for it will dissolve both powder and primer composition, rendering the loaded cartridge useless. The head of the case is placed in the sliding cradle as in decapping and the lever handle moved forward. This movement forces the case neck into the neck die and reduces it in diameter. As the lever handle is moved backward the case neck is pulled over the expanding plug which enlarges it to a uniform inside diameter correct to accept the bullet, regardless of the variable thickness of the case wall. This one operation properly resizes case necks. Do not run the case neck through the die several times in the belief that superior results will be obtained. The expanding plug (10) should be adjusted to the mouth of the neck die and only slightly deeper than the adjustment as illustrated. These parts operate independently of each other. Clearance must be permitted between them so that the case mouth may pass freely over the expanding plug when entering the neck die and, on the backward stroke, expansion must not be restricted by the contracting action of the neck die. The necks of new cartridge cases usually need to be resized before they will accept a bullet. This operation is always necessary if cast bullets are to be used.

Cartridge cases to be used in the same arm in which they have been fired do not require full length resizing. Full length shell resizing is discussed on page 28 of this Handbook.

To facilitate bullet seating the case lips should at this time be slightly belled on the B. & M. crimp remover (part 15) or reamed with a knife or burring tool.

The cartridge cases have now been decapped, reprimed and muzzle resized and are ready for powder charging. This operation is readily accomplished by employing a B. & M. Visible Powder Measure. A complete description of this tool and the manner in which it operates will be found on page 37 of this Handbook. With this tool charges of any powder available to the handloader can be safely thrown and unless super-accurate loads for target shooting are desired the purchase of a set of expensive scales is unnecessary.

The charged cartridge cases are now ready to have a bullet seated in them. At the risk of repetition we wish to state again that the charged cases should be closely examined to detect double charges or no charge at all—errors may have occurred. Any error of this nature that may prove dangerous can be detected by noting the comparative height of the powder column in the cases.

Bullet Seating

The Model 26 Bullet Seater

The Model 26 Bullet Seater consists of a Die to hold the cartridge case, a Base, and an adjustable Bullet Seating Plunger.

The die holds the cases as in the chamber of a gun. The upper portion of the die corresponds to the bore of the gun, but is essentially a little larger. A bullet slides down it smoothly without cant or wobble. This method of holding the case and bullet is the greatest feature of the tool. The bullet must go into the case true and straight—a fundamental ballistic requirement. The base is recessed on one side. This side is used when seating bullets. The unrecessed side is used when crimping. The bullet seating plunger is bullet diameter and fits the upper section of the die snugly; hence, it pushes only in a straightline. It is threaded for adjusting bullet seating depth and the adjustment is maintained by a split washer and heavy knurled nut under the head.

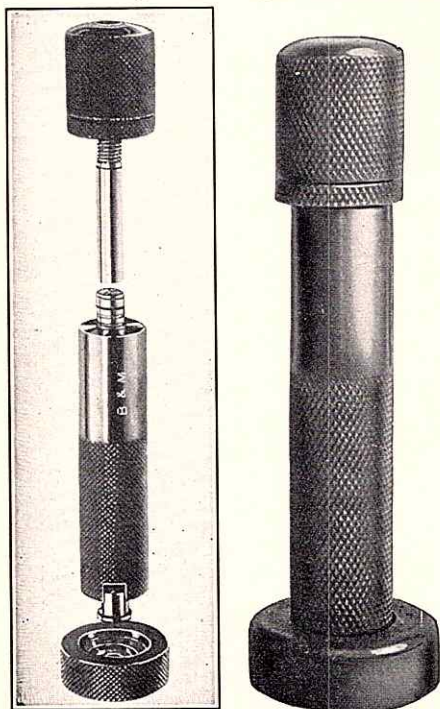
To seat bullets with this tool the base is used recessed-side up. The charged cartridge case is slipped into the die and both placed on the base casting. The bullet is now dropped into the top of the die and the bullet seating plunger inserted. A few light blows on the top of the plunger with a rubber mallet forces the bullet into the case neck. Proper bullet seating depth is obtained by adjusting the bullet seating plunger. Another and very desirable method, especially when using cast bullets, whose sides are relatively soft and require care to prevent shaving, is to start the bullet by hand in the slightly reamed or belled lips of the charged cartridge case and then insert the combination in the bullet seater die in which the seating plunger has been left in place, to complete the seating operation.

Crimping, itself, is not an aid to accuracy and should be avoided when not necessary (see page 10). Crimping with the Model 26 Bullet Seater is accomplished by a shoulder in the bullet seating die which, as the cartridge case is forced in, engages the case lips, turning them in against the bullet. To crimp with this bullet seater the bullet is seated, as described above, to a depth where the center of the crimping ring or cannellure of the bullet is parallel to the case lips. The complete cartridge is then inserted in the bullet seating die and both placed on the unrecessed side of the base casting. A few light blows on the top of the die with a rubber mallet

(never use a metal object) forces the case against the crimping shoulder of the die which turns the lips of the cartridge case into the ring on the bullet provided for the purpose, thus crimping and securely holding it in place.

Cartridge cases tend to lengthen if used repeatedly and even new cases of various makes differ slightly in over-all length. It is evident that long cases will engage the crimping shoulder in the die earlier than short ones.

Exceptionally long cases which may be shortened to the proper length with a file or cartridge case trimmer, may be well crimped before their heads are flush with the base of the bullet seating die and if, after the case is properly crimped, additional force is applied, the case may be buckled, necessitating full length resizing, or be deformed so completely that it must be discarded. No great amount of force is required to effect a crimp. A few light taps should be sufficient. The formula for successful crimping is light pressure and frequent inspection. In a surprisingly short time the "feel" of the force necessary to crimp properly is acquired and from then on crimping with the Model 26 tool is swift and accurate.



Model 26 Bullet Seater

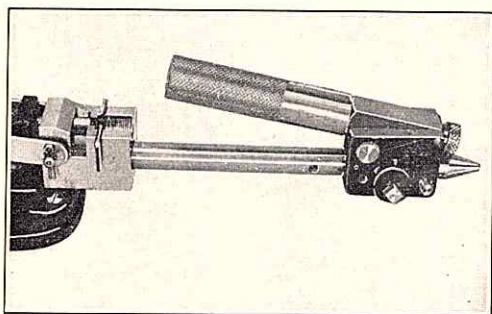
The Model 26 Bullet Seater is made for all standard and popular calibers. Bullet seating dies for 30-06, 30-40 and similar calibers are not ordinarily furnished with crimping shoulders because these cartridges are generally used in bolt action rifles. They can, however, be had with the crimping feature.

The face of the bullet seating plunger is concaved to conform with the shape of the forward section of the bullet. This avoids deformation during the bullet seating operation although a plunger concaved for a pointed or spitzer type bullet will usually seat other types without damage. When ordering always state the caliber and type of bullet to be used.

The Model 28 Bullet Seater

The bullet seating attachment on the Model 28 Improved Straightline Reloading Tool operates on the straight-line principle in essentially the same manner as the Model 26 Bullet Seater (see p. 17). The interior of the bullet seating die is identical to the Model 26 die and holds the cartridge case as does the chamber of the gun but is without the crimping shoulder. The upper end of the die is threaded for attachment to the hinged bar of the Model 28 Improved head. The bullet seating plunger fits into the head of the Model 28 Improved Tool and is equipped with lock nuts for adjusting bullet seating depth.

The tool, when used for bullet seating, must be placed in an inclined or upright position to prevent powder being spilled during the process. Parts 9 and 10 (see page 14) are replaced with the bullet seating die and plunger parts 17 and 18,



The Model 28 Improved Tool Set Up as Bullet Seater

The tool is now ready to seat bullets and the operation is accomplished in either of two ways. The first and preferable method is to start the bullets by hand in the case neck, which has previously been slightly reamed or belled on the crimp remover (part 15) of the tool. The charged case and bullet are then inserted in the bullet seating die and the base of the case placed in the sliding cradle. The hinged bar (6) should be held down firmly by hand. The lever handle is now moved forward until the sliding cradle is stopped by the bullet seating die. This operation seats the bullet and the return stroke extracts the loaded cartridge from the die.

The second method of seating bullets differs from the first in but one particular. If the reloader so desires the bullet may be slipped in the bullet seating die followed by the insertion of the charged cartridge case. Care must be exercised, when using this method, to insure the alignment of the case muzzle with the base of the bullet. The bullet is not properly held in the bullet seating die until it reaches the upper or "bore like" section. Perfect alignment will usually be obtained by rotating the cartridge case a quarter turn or so while the lips are in contact with the base of the bullet.

The Model 28 Improved Bullet Seater does not crimp. It does, however, seat bullets with precision and accuracy and is appreciably faster in operation than the Model 26. Should the purchaser of a Model 28 Improved Tool desire to load a caliber which requires crimping he must use a Model 26 Bullet Seater in place of

standard Model 28 Improved parts. The Model 28 Improved Tool can be purchased with or without bullet seating attachments.

Fit of Bullets in Throat of Barrel

In a rifle chamber there is a space forward of the point where a chambered cartridge case ends and which has the rifling lands cut away to accept the bullet. This space is sized to accept a certain standard bullet, but when bullets other than standard are used it is desirable that the handloader know the depth and diameter of this space. This information can be obtained by making a sulphur cast of the chamber and a portion of the bore from which exact measurements may be had. If at all possible, a bullet should be selected which may be seated to such depth that, when the cartridge is chambered, its forward section almost touches the rifling. While not all bullets have sufficient length or are designed to permit loading in this manner the practice should be followed wherever possible as an aid to accuracy. In cartridges not so loaded, the bullet is permitted either a free jump to the rifling when fired or is wedged against the lands by the closing action of the lever or bolt—both should be avoided. Much valuable information regarding the shape and size of the throat or lead (pronounced leed) of a rifle may be obtained by the following experiment. To determine the proper seating depth of a certain bullet start the bullet, which you contemplate using in the cartridge case. Insert the combination in the gun and close the bolt or lever to a point where the bullet meets the rifling. In following this procedure the cartridge will be removed after each trial and the bullet seated slightly deeper until you have reached the point where the combination chambers freely and the bullet, when the action is closed just touches or nearly touches the rifling. The over-all length of the dummy cartridge will serve as a guide when seating similar bullets.

Reloading Revolver and Pistol Cartridges

Pistol and revolver cartridge cases are reloaded in the same manner and with the same tools as are used when assembling rifle cartridges. Their fired cases must be decapped, reprimed, the case necks resized, charged and a bullet seated in exactly the same manner as described under the section of this Handbook dealing with the operation of B. & M. Straightline Reloading Tools.

Fired cases of automatic arms often require full length resizing (see page 28) before the cartridge case can be rechambered in the arm in which it was fired. The B. & M. Bullet Sizer (see page 73) is furnished with a specially hardened die for the purpose of full length resizing the 45 A. C. P. cartridge case. Ideal and Wilson Full Length Shell Resizers may be had from B. & M. for any of the other automatic pistol or revolver cartridge cases which require full length resizing.

There are certain precautions other than those mentioned previously, which the handloader of revolver and pistol cartridges must observe. While pressures developed by full power loads in modern rifles often exceed 52,000 lbs. per square inch, most pistols and revolvers were not designed for pressures exceeding 15,000 lbs. per square inch, or less than a third. Smokeless powder used in reloading these cartridges is fine grained and burns rapidly and efficiently in the comparatively short barrels of this type of firearm. Pressures developed by pistol powders vary greatly for small changes in weight of charge, bullet weight and diameter, alloy, and seating depth. Always start with a charge of powder considerably less than that recommended and gradually work up to the maximum recommended charge, watching carefully for indications of excessive pressure (see page 34). Not only should bullets be of the same type and weight as those recommended to be used with the powder charge, but if solid bullets are used they should be cast from a hard alloy such as one part tin to fifteen parts lead or harder. Pistol and revolver powders deliver a blow rather than a push to the base of revolver bullets with the result that the bases of bullets cast from a soft alloy tend to "set up" or enlarge as they pass to the rifling and thus increase pressures.

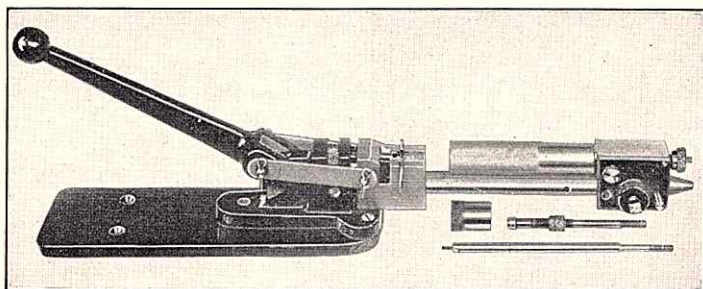
With these additional precautions in mind, pistol and revolver cartridge cases are successfully reloaded. All that has been said of the advantages of reloading rifle cartridges applies equally well to the practice of reloading for pistol and revolver.

B. & M. Straightline Reloading Tools

The Model 28 Improved Straightline Reloading Tool

The Model 28 Improved represents the most recent development in B. & M. Reloading Tools. As furnished with standard bullet seating attachments, it is recommended for use in reloading any cartridge for use in single shot or bolt action rifles when no crimp is necessary or desired. For reloading cartridges which must be crimped, it is furnished less the standard bullet seating attachments but with the Model 26 Bullet Seater.

The Straightline feature has been retained. Several changes in design, however, contribute to make it even easier and more rapid in operation than its predecessor. No auxiliary tools are needed when reloading with the Model 28 Improved. The Decapping Stem, Expanding Plug and Bullet Seating Plunger are held in position in the head by means of a knurled nut. Removal of any of these parts is readily accomplished by releasing this knurled nut and slipping the part from the head. The Decapping Stem requires no adjustment. Adjustments on the expanding plug and bullet seating plunger are made on the parts themselves by means of two knurled lock nuts. Removing these parts from the head does not alter these adjustments. They may be removed any number of times and when replaced always return to their original position. To change the tool from one reloading operation to another requires but a few seconds and, since in making the change no adjustments have



Model 28 Improved Reloading Tool Set Up for Bullet Seating.

been altered, it is extremely practical for the experimenter to completely reload as few cartridges as his needs require for testing purposes and, when one of suitable ballistics is found the tool may then be used to assemble accurately and rapidly that load in any quantity required.

The Model 28 Improved may be adapted to other calibers than that for which it was originally obtained (see note top page 22) by the purchase of additional parts. Additional parts for added calibers are as follows:

Extra Bullet Seater Die.....	
Extra Bullet Seating Plunger.....	
Extra Expanding Plug.....	
Extra Neck Die.....	
Extra Decapper Complete.....	
Extra Decapping Pin.....	
Extra Sliding Cradle.....	
Extra Priming Punch.....	
Extra Rim Plate (part No. 14).....	

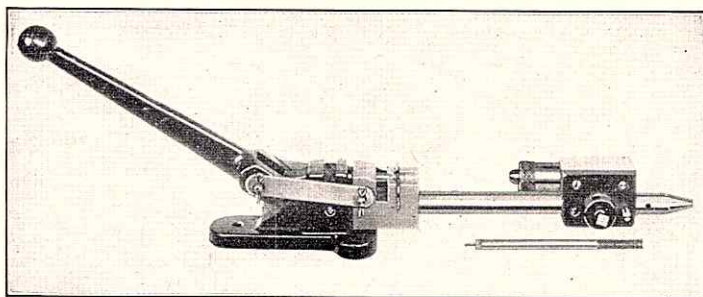
For prices see our
regular Price List.

Shipping Weight Model 28 Improved Tool, 5 pounds.

B. & M. Reloading Tools and other B. & M. Products are recommended

for the individual loading cartridges for his own needs and, if he so desires, for a few of his friends. They are comparatively inexpensive, well made and so compact that they are frequently carried to the range or afield where their services may be required to replenish a dwindling ammunition supply or unload and reload a certain lot of cartridges which may have proven unsatisfactory. They are not recommended for use by groups of shooters such as Rifle Clubs, Police Departments and similar organizations loading as a unit and using comparatively large quantities of ammunition. Such groups will be better served by the purchase of one of the several "C" or turret type, semi-automatic reloading tools as listed on the following pages. B. & M. Reloading Equipment has been manufactured and sold world-wide for more than 40 years and has the approval of experienced shooters everywhere. Your satisfaction is guaranteed or your money will be refunded.

The manufacture of the B. & M. Model 26 Straightline Reloading Tool has been discontinued. However, since there are many thousands of them in use by hand-loaders everywhere, and many of these owners wish to convert them to reload a caliber of cartridge different than that for which it was originally fitted, we continue to manufacture B. & M. Model 26 Dies. The illustration is shown herewith as an aid in its identification. The names and numbers of Model 26 Dies correspond with those for the Model 28 Improved as shown on page 14. The Sliding Cradle, and Neck Die for the Model 26 interchange on the Model 28 Improved Tool. The Decapper and Expanding Plug do not. Therefore, if you have a Model 26 Tool and desire additional Decappers or Expanding Plugs, be sure to specify Model 26, because ordinarily, we would ship Model 28 Improved Parts.



Model 26 Reloading Tool Set Up for Resizing.

The Model 26 may be adapted to calibers in addition to the one for which it was originally obtained by the purchase of additional parts; (see note top page 22). Parts necessary to adapt the Model 26 for use in reloading other cartridges are as follows:

Extra Sliding Cradle
Extra Expanding Plug
Extra Neck Die
Extra Decapper (complete)
Extra Decapping Pin

Model 26 Bullet Seater
(complete for one caliber)
Extra Bullet Seating Plunger
Extra Bullet Seating Die
Extra Rim Plate (No. 14)
Extra Priming Punch

For prices see our regular Price List.

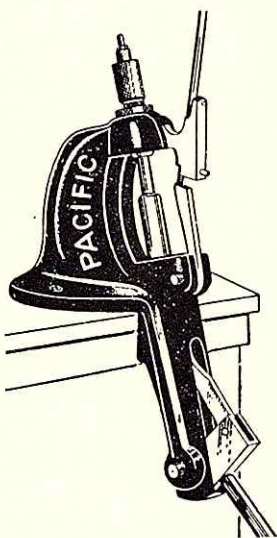
Dies are also available on special order for the B. & M. Model 24 Straightline Reloading Tool, manufactured more than twenty years ago; also for the Model 28 which differs somewhat from the Model 28 Improved. However, since not many

continue to use the Model 24 and only a limited number of the Model 28 were ever manufactured, no illustrations of these models are shown herein. If your present B. & M. Reloading Tool does not correspond exactly with the illustrations shown or descriptions of either the Model 26 or 28 Improved B. & M. Reloading Tools, write for further instructions before placing an order for additional parts.

NOTE: Because there are so many possible combinations of calibers which can be had on a B. & M. Reloading Tool, it has not been found practical to publish a list of the extra parts necessary to adapt a tool set up for one caliber to any of the others. Many times some of the parts can be satisfactorily used for reloading several other calibers. We suggest, therefore, when ordering a tool to be used for several calibers or when desiring to adapt a tool to additional calibers, that you write giving us complete information. We shall then be able and pleased to furnish a detailed list of the additional parts required and a statement of their cost.

While not absolutely necessary, we recommend that when additional parts are ordered the Reloading Tool be returned to our factory to insure the proper fitting of parts. When ordering Reloading Tools always state what type of bullet is to be used and whether it is cast or jacketed. Often a sample bullet and fired cartridge case will save a delay in filling orders.

The Pacific Reloading Tool



Pacific Reloading Tool

This is the original of the "C" type of reloading tool. It has been manufactured for close to 25 years. It is found wherever there are handloaders. A set of dies for these consist of a Resizing and Decapper Die and a Bullet Seating Die. A Shell Holder and Priming Arm are also used. The resizing die is a combination die in that it resizes the fired case full length and decaps it on the up-stroke of the handle and on the return stroke, the neck is inside expanded. During this operation, an intermediate stop is made during which the case is reprimed. The resizing die can also be had so constructed that it will size the neck only of the case.

When all cases have been put through the Sizing Die and charged with powder, the Bullet Seating Die is mounted. This die seats the bullet and crimps it in if the bullet has a crimping cannellure and the operator desires a crimped cartridge.

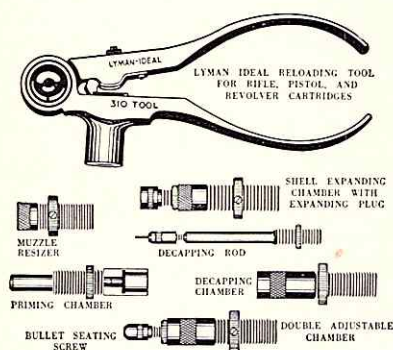
There are two sizes of primers used in handloading, commonly termed large and small. If both sizes are being used, two primer arms will be needed. Extra shell holders are needed to accommodate the various calibers of cartridges as the bases of them vary.

The Pacific Tool is available in two models, the Super and "Big C." The Super is a ruggedly built press weighing about fifteen pounds and is successfully used by both individuals loading for their own needs as well as by custom loaders. It is also recommended for use by those handloaders who do heavy case reforming operations, bullet making and similar swaging operations. The "Big C" is a much heavier tool, weighing twenty-three pounds, fitted to do any kind of handloading including shot shell reloading.

Complete and detailed instructions for operating these tools accompany each set. See your copy of our latest Price List for prices.

Lyman Ideal Reloading Equipment

Lyman Ideal No. 310 Reloading Tool



No. 310 Reloading Tool.

The Lyman No. 310 is one of the oldest models of reloading tools now being manufactured. It is a tong or pincher type designed for the individual for loading a comparatively limited number of cartridges for his own use. Some purchase it because it is light and can be carried anywhere. It is also widely used to load for certain guns which are used infrequently.

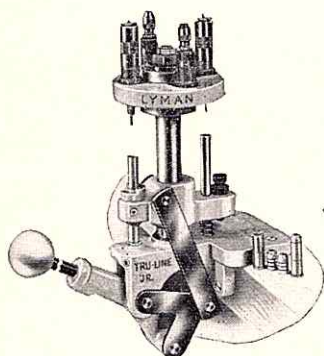
This tool will satisfactorily perform all necessary reloading operations on center fire rifle or revolver cases. It consists of a set of Handles, an Adapter Die, which fits in the Handles, Decapping Chamber and Rod, Priming Chamber, Muzzle Resizer, Expanding Chamber and Plug and a Double Adjustable Chamber and Bullet Seating Screw.

It is not now necessary to buy a separate tool for about every different caliber which one would wish to load. The 310 tool handles are now fitted with an adjustable extractor hook so that many calibers of rimmed and rimless cases can be processed in the same handles. The adjustment is made by simply screwing the adjusting screw in or out to accommodate the head of the shell. A lock nut is provided to keep the adjustment. A separate adapter die which functions as a shell holder or cradle is now a part of every set of 310 dies.

Complete instructions for the operation of this tool accompany every set.

This is the least expensive of all reloading tools now offered. See the latest copy of the B & M Price List enclosed for latest prices.

Lyman Ideal Tru-Line Jr. Reloading Tool



Tru-Line Jr. Tool.

This is a turret type straight line reloading press designed for permanent mounting in home or workshop to meet the needs of any individual handloader loading for his own use.

Die Sets for reloading rifle cases consist of a Combination Die which decaps and sizes the necks of cases inside and outside in one operation, a Priming Punch, Shell Holder and a Double Adjustable Bullet Seating Chamber and Screw. There are four positions in the turret which will permit the mounting of two sets of these dies if the operator so desires. The die sets for pistol cartridges differ in that they do not include a combination die. Here, an Expanding Chamber and Two-step Expanding Plug and a Full Length Sizing Die with Decapping Rod are substituted. Two sets of pistol dies cannot be mounted simultaneously.

With the exception of the Priming Chamber, dies for the No. 310 tool can be used in the

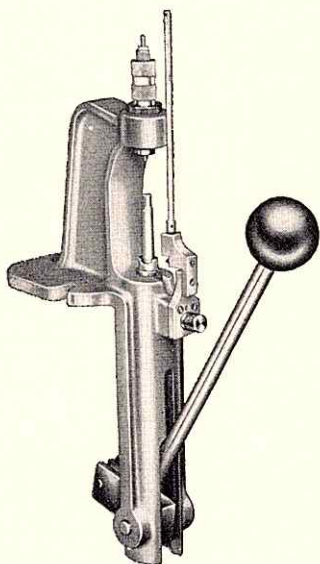
Tru Line Jr. The Priming Punch and Shell Holder replace the Priming Chamber.

Complete instructions for operating the press accompanies each set.

This tool is well constructed and is strong and rugged. Ammunition can be produced rapidly.

Instructions call for its attachment to a solid bench by means of four wood screws which are included with the set. We suggest the substitution of two $\frac{1}{2}$ " bolts for the two screws which enter the top side of the bench as a much better arrangement. In our experience the screws will not hold it permanently in place.

Lyman All-American Comet Reloading Press



All-American Comet Press.

This is Lyman's entry into the "C" type of Reloading Presses and is designated the Comet. This type of tool is also designed for permanent mounting in the home or workshop and to meet the needs of the individual for his requirements for ammunition. Since dies used with this kind of reloading tool are designed to full length re-size cartridge cases, they are sometimes used by commercial reloaders.

A Die Set for this press for rifle cases consists of a Full Length Resizing Die and Decapping Rod, a Bullet Seating Die and Seating Screw, Shell Holder and Priming Punch. The Die Set for pistol cartridges differs in that a separate Full Length Sizing Die is provided along with another die which is composed of an Expanding Chamber, Expanding Plug and Decapper. These two dies take the place of the Full Length Resizing Die and Decapping Rod of the regular set.

The Comet Press can be used with upstroke or downstroke pressure by making a simple adjustment of the handle lever bar. This press is also designed for the mounting, at extra cost, of a "Slip-In" automatic primer feed.

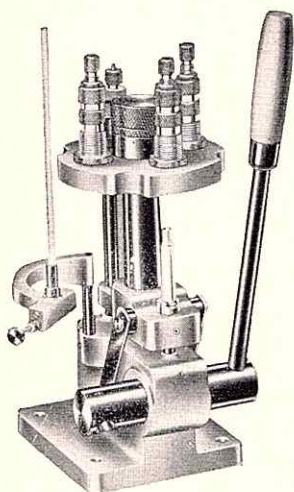
With the exception of the priming chamber of the 310 Tool, dies for both the 310 and Tru Line Jr. Tools can be used in the Comet press by means of an Adapter which is included as standard equipment. Shell Holders and Priming Punches of Tru Line Die Sets fit the Comet press.

Dies for shot shell reloading are also available. Since the Comet Sizing and Bullet Seating Dies are made with the familiar $\frac{7}{8}$ " x 14 thread, any make of dies having this thread can be used in these presses. The Shell Holder and Priming Punch do not interchange in any but Lyman Tools.

The "C" design as applied to cartridge reloading presses is a proved design, these having been manufactured and sold for more than twenty-five years.

Complete instructions for the operation of the Comet press accompanies each outfit. For prices see your latest copy of the B & M Price List.

Lyman All-American Turret Reloading Press



All-American Turret Press.

The All-American Turret Reloading Press is the Lyman entry into the heavy reloading press field. While some individuals will select it for reloading their own ammunition requirements, we believe it will find its greatest popularity amongst those who load cartridges for resale. This is a strong, rugged tool designed to produce fine ammunition rapidly.

The Turret Press takes the same kind of dies as the Comet. Therefore other makes of the $\frac{7}{8}$ " x 14" Dies designed for use in "C" type tools may be used as the owner prefers. Case Holders and Priming Punches do not, however, interchange with any but Lyman tools. Adapters are also furnished with the Turret press which permit the use of No. 310 or Tru-Line Jr. dies. Dies for loading shotgun shells are also available.

The Turret head is fitted with four tapped holes so that two sets of dies may be mounted simultaneously if so desired. The Lyman No. 55 Powder Measure with threaded drop tube may also be mounted thereon. A cartridge may be loaded with this type of turret head without removing the case from the shell holder.

Provision is made for the handle to be operated in an up or down stroke as the user prefers. At additional cost, an automatic "Push Button" primer feed is available.

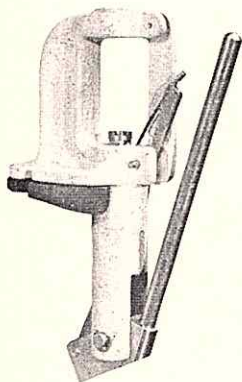
Complete instructions for operating this press accompanies each outfit. For prices, see the latest copy of the B & M Price List.

The Lyman Gun Sight Corporation also manufactures another reloading press known as the Ideal "EZY-Loader" for loading rifle, revolver and shotgun ammunition. It is another heavy bench tool intended primarily for quantity reloading. It will accommodate all Lyman manufactured dies except the Priming Chamber of the No. 310 and the Priming Punch of the Tru Line Jr., Comet and Turret type. It will also take any of the other makes of $\frac{7}{8}$ " x 14" Sizing and Bullet Seating Dies.

Operating instructions accompany each set.

It is priced in the B & M Price List.

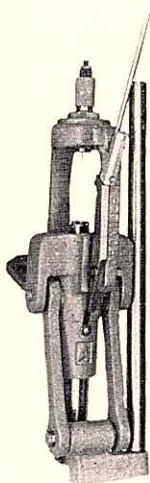
R C B S Reloading Tools



RCBS "Jr" Tool

This is a strong and ruggedly constructed press of an "O" type. It is adequate for reloading all rifle and revolver cartridges and for most case forming and bullet making jobs. It operates with an up or down stroke of the handle. It is equipped with a removable head shell holder ram. Shell holder heads which must be of RCBS make are easily changed, they being held in place by an Allen set screw. "C" or Pacific type shell holders, priming arms and the Pacific type of auto primer feed are also adapted for use on this press. It takes any make of $\frac{7}{8}$ " x 14 dies. For those who wish to use this press tipped back a wedge shaped block is also available at extra cost.

This is a well constructed tool available at a comparatively low cost. Complete instructions for operation accompany each press.



RCBS Model
"A-2"

This is an exceptionally strong combination bullet making and reloading press. It is suited for loading rifle, pistol and shot shells.

It weighs 26 pounds and is designed for strength, leverage being sufficient to form 270, 30 and larger caliber bullets without undue labor on the part of the operator. It really needs to be seen and operated to be appreciated.

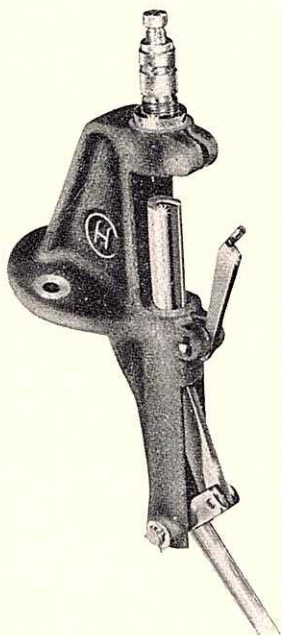
It is easily attached to any good work bench and the stroke may be adjusted to up or down as preferred by the user. It takes the RCBS Model A shell holder and priming arm and no other make can be used. Any make of $\frac{7}{8}$ " x 14 thread dies may be employed. A Model "A" shell holder ram and shell holder head of RCBS make are also available. It is not necessary to remove the toggle joint assembly when changing shell holders in this press.

The Pacific automatic primer feed attachment cannot be employed until altered slightly at a cost of \$1.00.

This press is especially recommended for use by the hand-loader engaged in major case alteration operations and who swages his own bullets.

Complete instructions for operation accompany each press.

C-H Reloading Tools

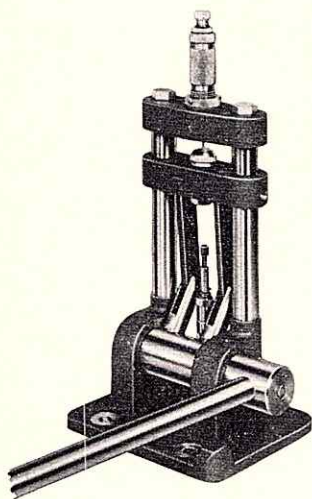


This C-H Super "C" Reloading Press is a rugged and efficient reloading tool available at the lowest price of any of the models we handle which employ $\frac{7}{8}$ " x 14 thread dies. The "C" tool easily performs all necessary reloading operations including full length shell resizing, forms cases and swages bullets with a minimum of effort.

As stated above, standard or $\frac{7}{8}$ " x 14 thread dies of any make are adapted for use in this tool. Except for 25-35, 30-30, 348 Winchester, 32-20, 32 Special, 38-40, 45-70 and the revolver cartridges C-H make of dies are not designed to crimp. The shell holder and priming arm is the Pacific type and interchange with the Pacific tool. It weighs about 7 pounds complete for one caliber.

This is an excellent reloading press available at low cost for handloading ammunition.

Complete instructions for operating accompany each press.



The C-H Magnum Press is designed to incorporate maximum strength with positive alignment. The C-H "H" press is of simple rugged design, particularly adapted to heavy operations requiring a high degree of accuracy. The two upright posts assure positive alignment of the case holder to the dies. The thrust of the tool is located directly under the case holder, thereby eliminating any possible distortion of the slide due to spring. The upright columns are ground and chrome plated to give lasting wear and corrosion resistance. This press which weighs about 14 pounds will handle all sizes of rifle and revolver cartridges and may also be economically changed over to reload shot shells.

While the tool employs the standard $\frac{7}{8}$ " x 14 thread dies, the shell holder and priming punch do not interchange with any other make of press.

Complete instructions for operating accompany each press.

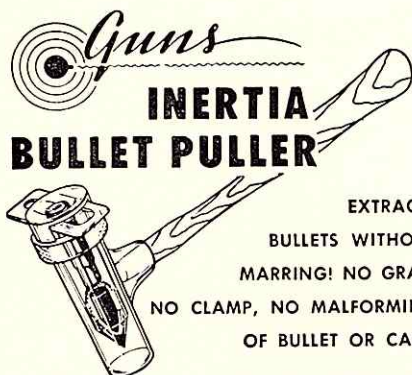
CONCLUSION

As the reader has noted, there are many makes and models of reloading tools from which to choose. We list eleven in this Handbook but there are others currently available. We have tested all we list and know definitely all are well adapted for the work for which we recommend them. The final choice must rest with the buyer. Since price is a major factor in making this choice and such information is not always clear in some advertising, we submit the following:

As of late 1958 the comparative prices of the reloading tools we offer complete to load one caliber are as follows:

	Rifle	Pistol
Ideal 310 Tool.....	\$16.50	\$16.50
B & M Model 28 Improved.....	19.50	21.00
Ideal Tru Line Jr.....	28.25	30.25
C-H "C" Press.....	33.00	33.00
Pacific Super.....	39.50	39.50
Lyman Comet.....	44.25	44.25
RCBS "Jr".....	45.00	45.00
C-H "H" Press.....	55.50	55.50
Lyman Ezy-Loader.....	52.00	50.50
Lyman Turret.....	66.25	66.25
RCBS A-2.....	79.00	79.00

None of the above prices include automatic primer feeds and are subject to change without notice. See your copy of the B. & M. Price List for detailed information on this subject.



Handles full range, .22 thru .45—**LEAD BULLETS, WAD CUTTERS** and some Magnums.

any means can be recovered. It handles all calibers. Full instructions for its use accompanies each tool. Shipping Weight—1 pound.

Bullet Puller attachments are also available for Pacific, RCBS and CH reloading presses. See the B. & M. Price List for listing of these.

Primer Pocket Reamer

For removing the crimp from the primer pocket of Frankfort Arsenal and other caliber cases using large size primers.

Shipping Weight—4 ounces.

Full Length Shell Resizing

The cases of cartridges fired in arms in good mechanical repair, other than automatic arms, do not expand to the extent that they will not rechamber easily in the same arm when reloaded. With few exceptions it is not necessary and is not advisable to full length resize fired cartridge cases. However, all cartridge cases used in auto loading arms expand excessively and must be resized full length before reloading. With the exception of the 45 A. C. P. and a few other automatic pistol calibers, the practice of reloading cartridges for use in automatic arms is impractical.

We regularly furnish a full length shell resizer for the 45 A. C. P. case similar to our Bullet Sizer described elsewhere in this catalogue. Due to the variation in the diameter of chambers of rifles, cartridge cases fired in one arm often must be resized full length for use in another of the same caliber. Some shooters prefer to

full length resize a lot of cartridge cases which are to be reloaded for use in the game fields: it insures that they will chamber easily and guards against the possibility of one failing to eject easily upon firing. For those shooters, we furnish a full length resizing Tool of "Ideal" or Wilson manufacture for all popular calibers.

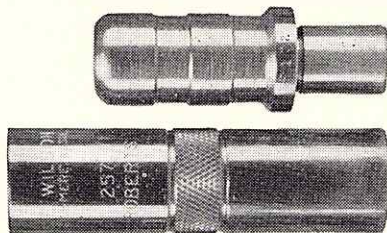
The outsides of the cartridge cases to be full length resized should be slightly oiled with an oily rag to facilitate the operation and to reduce wear of the die to a minimum. Oil must never get inside the cartridge case. An excess of oil will trap air within the die and as pressure is applied longitudinal creases will form in the shell case.

When using the Ideal Full Length Resizer, the cartridge case is started in the die and the combination inserted in a bench vise which is used to force the shell its entire depth into the die. Care must be exercised to apply the required force in a straight line. A punch is provided to drive the resized cases from the die. These dies are available in most popular calibers. Shipping weight—12 ounces.



**Ideal Shell
Resizing Tool.**

The Wilson make of Full Length Shell Resizing Die consists of a Die and Drift. In use, the case is dropped into the die, the drift inserted and forced down to its shoulder. The drift is then removed and the resized case is forced out with a rod which is furnished with each die. The die drift is adjusted to give standard head-space; the shoulder prevents going too far and ruining the case. Again, the best method of applying the required pressure is by using an arbor press or good vise. Full instructions accompany each die. The Wilson Full Length Shell Resizer is available in the following calibers only: 22 Hornet, 2 R Lovell, 218 Bee, 222 Reming-



Wilson Full Length Resizer.

ton, 219 Zipper, 219 Wasp, 22-250, 220 Swift, 25-20 Rep., 243 Winchester, 244 Remington, 25-35, 250 Savage, 257 Roberts, 257 x 6.5 (Jap Roberts), 270 Winchester, 7 mm Mauser, 30-30, 30-40, 300 Savage, 30-06, 300 Magnum, 30 Newton, 308 Winchester, 303 Savage, 32-20, 32 Spl., 8 mm Mauser, 33 Winchester, 348 Winchester, 35 Remington, 358 Winchester, 375 Magnum and 45-70.

Tools using $\frac{7}{8}$ " x 14 dies are provided with full length resizing dies as standard equipment.

Primers and Powders

Primers

The uncertainty and difficulty of ignition of the powder charge severely limited the general utility of the earliest firearms. The first "primer" system consisted of a pan, which contained the priming charge, covered by a lid which protected the powder then used from the elements. Ignition was effected by raising the lid and applying a smouldering cord or slow match. The wheel lock followed but was a complicated arrangement and was superseded by the flint lock about 1600. This method of ignition was employed for two centuries or until the discovery and adaption of the percussion system in 1805. Percussion caps such as those used to fire muzzle loading arms are common to-day. The breech loader presented new ignition requirements which were met by the adaption of pin fire and needle mechanisms. Rim fire and center fire cartridges followed. Practically all of our modern cartridges are now of the center fire type, an exception being the popular 22 caliber rim fire cartridge. Because of the difficulty of repriming, it is not possible to reload rim fire cartridges.

Repriming center fire cartridge cases, however, may easily be accomplished. Primers for American cartridges consist of shallow copper or copper alloy cups which contain the priming mixture and an "anvil". In repriming, the fired assembly is forced out and a fresh primer inserted.

It is not practical to discuss at any length the composition of the priming mixture as it is different in each make of primer. The ideal primer is one which is capable of generating enough heat to effect certain and uniform ignition of the powder charge, and leaves no residue which will cause corrosion of the rifle bore or damage the fired cartridge case. Remington Arms Company, Winchester Repeating Arms Company and Western Cartridge Co. manufacture respectively the popular "Kleanbore" and "Staynless" brands of primers which are non-mercuric and non-

corrosive and are the type reloaders should use. Cascade Cartridge Inc. also offer handloaders a complete line of modern primers. We carry a complete stock of all sizes of primers manufactured by the above companies from which we are able to fill your orders immediately. We also have in stock or can obtain primers of all other makes when these are requested, such as the Federal and Peters makes.

Choosing the Proper Primer

Primers are manufactured in two styles; a heavier one for rifles and a lighter one for revolvers or pistols. The only practical difference in these is in the thickness of the material used in the primer cup. Rifle cartridges develop higher pressures than pistol or revolver cartridges and therefore the material used in the manufacture of rifle primer cups is heavier than that used in pistol or revolver primers. Only rifle primers should be used when reloading rifle cartridges and, similarly, pistol or revolver primers should be used only in pistol cartridges. Aside from the question of pressures, mainsprings used in hand-guns are comparatively weak and often will fail to fire rifle primers, while the rifle mainspring may have sufficient power to drive the firing pin through the cup of the revolver primer allowing a mild escape of powder gas rearward. There are a number of cartridge cases which are adapted for use in either rifles or revolvers; therefore, when ordering, always state whether a rifle or revolver primer is desired.

Size

Rifle and revolver primers are each manufactured in a large and small diameter. The large rifle primer and the large revolver primer measure .211 in diameter. The small rifle primer and the small revolver primer measure .175 in diameter. On page 76 will be found a table of Jacketed Bullets, Primers and new empty Cartridge Cases, which lists all of the most popular calibers of cartridges. In the second column of this table, opposite each of the various calibers, will be found the proper size, designated by a number, of Remington, Winchester or Western non-mercuric, non-corrosive primer for that caliber. For example, your arm is a 22 "Hornet" caliber. Opposite the 22 "Hornet" caliber in the primer column you will find "Remington No. 6½, Winchester No. 116 or Western No. 6½." The proper size primer for the 22 "Hornet" cartridge is therefore either a Remington No. 6½, Winchester No. 116 or Western 6½. Order primers by number and brand and avoid all possibility of error.

The Remington No. 9½, Winchester No. 120, Western No. 8½ and Federal No. 210 are the large diameter rifle primers. Winchester No. 116, Remington and Western No. 6½ are the small diameter rifle primers. Remington No. 2½, Winchester No. 111 and Western No. 7 are the large diameter pistol primers and Winchester No. 108, Remington and Western No. 1½ are the small diameter pistol primers. In the Cascade line No. 200 is the large rifle, No. 400 the small rifle, No. 300 the large pistol and No. 500 the small pistol sizes.

Shooters can readily select the proper primer by referring to this table. If primers of other manufacturers are desired, specify whether for rifle or revolver, caliber and type (whether non-mercuric or otherwise). Practically all commercial primers are now of the non-corrosive, non-mercuric type.

Gunpowders

While still a matter of some controversy, the discovery of gun powder is generally accredited to Roger Bacon who recorded its formula in 1248. The substance was not, however, extensively developed until the invention of fire-arms in the 14th century. The formula which Bacon recorded is that of black powder. Improvements have consisted only in the refinement of the materials (sulphur, charcoal and salt peter) which enter into it.

The discovery of gun cotton in 1845 led the way to the development of smokeless powder for use in firearms. Considerable time elapsed after the discovery of gun cotton before any safe method of manufacturing it was devised. Smokeless powders for use in shotguns were brought out in 1867 but it was not until 1884 that a successful smokeless powder for use in rifles was introduced. Since that time a large number of similar smokeless powders based on the original discovery of gun cotton have been developed.

The handloader should understand the chief characteristics and recommended uses of the powders available today before commencing to reload. A brief discussion of the several classes and kinds follows. Powders may be divided into two general classes, black and smokeless.

Black Powder

In this age of modern smokeless, there is little demand or legitimate use for black powder. It is the only powder properly used in muzzle loading arms. In a few of the old cartridges, proper loads of black powder still give results slightly superior to any smokeless load. It is better adapted for use in straight sided or slightly tapered cartridge cases but some useful loads for modern arms may be had. Upon combustion, it creates a heavy smoke, leaves a large amount of residue in the bore and with it high velocities cannot be obtained.

Black powder is a mechanical mixture of sulphur, charcoal and salt peter. The rate at which it burns, since it is all of the same composition, is governed largely by the size of the grains. The finer the granulation the more rapidly it burns. Fg is the coarsest granulation commonly used in firearms and is the slowest burning size available to handloaders. It is adapted for use in large caliber cartridges like the 38's and larger when the cartridge case has a comparatively large capacity and a heavy bullet is used. Ffg is the next smaller granulation and is recommended for use in smaller caliber cartridges like the 32-20, 38-40 and similar sizes. FFFg, a finer granulation than Ffg, is used in shotgun shells and in small capacity revolver cartridges. There is also one designated FFFFg.

When assembling cartridges in which black powder is the propellant, the charge should not be unduly compressed or crushed by the base of the bullet, for in so doing the granulation will be made finer, thus increasing pressures, and uniform results cannot be obtained.

Smokeless Powders



Gunpowders.

Smokeless powders have almost entirely replaced black powders in all cartridges for use in firearms. When properly loaded, they burn cleanly, cause no objectionable smoke and leave little or no residue in the bore.

They have proven entirely satisfactory for use in all calibers of rifle, revolver and shotgun cartridges.

Charges of smokeless powders are given in terms of weight (grains) and not by bulk as is sometimes the case with black powder. Black powders are mechanical mixtures and should two different sizes be mixed, the average characteristics of both would be obtained, but smokeless powders are chemical combinations and should

different types be inadvertently mixed the lot should be discarded. Their rate of combustion and therefore the developed breech pressures vary greatly. The shape

and size of the grain, coating, structure, etc., all combine to regulate the rate of combustion and are different for each brand of powder. A brief discussion of the various types of smokeless powders follows. Those adapted for use in firearms may be divided into the following classes;—Military Smokeless, Bulk Smokeless, Pistol and Shotgun Powders.

MILITARY SMOKELESS

Recommended for full power rifle loads

The powders of this class which are available to the handloader are DuPont Nos. 3031, 4227, 4198, 4320, 4064, 4350, Hercules "HiVel" No. 2 and 2400. These powders are progressive burning and with the exception of Nos. 4227 and 2400 are coarse grained. The grains are usually tubular and non-porous and can burn only layer by layer. The outer layers are coated with a substance which retards the rate of combustion in its early stages. They impart a push rather than a blow to the base of a bullet. As the bullet progresses up the bore of the arm the rate of combustion of the powder grains increases, thus maintaining pressure and developing high bullet velocity. These powders are adapted for use only in full power or nearly full power loads for rifle cartridges employing jacketed bullets.

DuPont Nos. 3031, 4198, 4064 and Hercules "HiVel" No. 2 are recommended for use in calibers like the 257 Roberts, 250 Savage, 270 Winchester, 30-06 Springfield, 30-40 Krag and other similar bottle necked cartridges. Of these DuPont No. 3031 and Hercules "HiVel" No. 2 are the most popular, though any of the four may be used satisfactorily. No. 4320 is particularly adapted to the 30-06 cartridge but many loads for similar cartridges are listed. DuPont No. 4227 and Hercules No. 2400 are adapted for use when reloading the popular Hornet cartridge and are well adapted for use in other similar cartridge cases. DuPont No. 4350 is a slow burning propellant used in the larger caliber military and sporting cartridges with fairly heavy bullets.

Full power charges listed for these powders are usually maximum and represent the amount which cannot be exceeded with assurance of safety. They are not necessarily the best. Handloaders will frequently find that improved accuracy will result when the maximum listed charges are appreciably reduced. These powders burn efficiently only within certain pressure limits. Slight over charges build up dangerous pressures while greatly reduced charges will not burn cleanly or uniformly.

BULK SMOKELESS

Recommended for reduced rifle loads

Bulk Smokeless Powders were the first smokeless propellant introduced to supplant black powder and quite a large number of kinds have been manufactured and used. These powders were loaded "bulk for bulk" with black powder, i.e., a measuring device designed for black powder would, when filled, contain the correct charge of bulk smokeless for the cartridge for which it was intended. While these powders were smokeless and convenient to load, they possessed several disadvantages and the manufacture of them has now been largely discontinued, there being but one true bulk smokeless powders (DuPont Bulk Smokeless) available at this time. Since they were loaded like black powder, the nominal full power load being the cases in use at the time, filled, there was not much danger of overloading and reduced loads were obtained by simply using less powder. Reduced loads are now largely obtained by using DuPont Nos. 4759 Rifle Powder and Hercules Unique. These and DuPont No. 80 Rifle (discontinued) are sometimes erroneously termed bulk smokeless powders. We sometimes speak of them as "bulk" smokeless powders. These powders are fine grained and burn rapidly. They are not progressive burning and, consequently, highest velocity loads cannot be obtained. They are however the powders to use when making up reduced loads for modern rifles, loads approaching standard black powder pressures and velocities in the older types of rifles, and loads for a number of the larger caliber pistols and revolvers. Powder charges for these are always given by weight.

SMOKELESS PISTOL POWDERS

These are fine grained quick burning smokeless powders designed to burn cleanly at low pressures in short barrels. Hercules "Bullseye" and DuPont No. 5066 are the two pistol powders available to handloaders. DuPont No. 4759 and Hercules "Unique," both "bulk" smokeless powders, are also used extensively in large caliber pistol cartridges by many handloaders. Pistol powders are not adapted for use in rifles except possibly for very light charges.

SMOKELESS SHOTGUN POWDERS

These Powders are fine grained and are designed to burn efficiently in shotguns. The bore of the shotgun is relatively large and smooth and the resistance offered by the shot charge and wads is less than is the case with rifle and revolver bullets. The use of these powders other than in shot shell loading, is not advised. Under this classification is Hercules "Herco" which is a progressive burning shotgun powder recommended for use in high velocity shot shell loads. AL-5, AL-7 and AL-8 are similarly used. Hercules Red Dot, Dupont Bulk Smokeless, PB, AL-101 and Super-M Ballistite are used in medium power game loads and for trap loads. For further information on shotgun powders, see section devoted to reloading shotgun shells.

Selecting the Proper Powder

It will be seen from the foregoing discussion that the choice of a proper propellant is not a difficult matter. For all loads developing high velocities in modern rifles, the choice of a progressive burning military smokeless powder is indicated. For reduced or midrange loads for these rifles and for reduced or full power loads in the older models of rifles designed for black powder, modern "bulk" smokeless (DuPont No. 4759 and Hercules "Unique") is the type of propellant to choose. Pistol or revolver cartridges will require the choice of a pistol powder, and shot shells the proper shotgun powder according to the type of load desired. We make no recommendations as to the choice of a Hercules or DuPont powder. Both brands are manufactured by reliable companies and have proven entirely satisfactory for the uses recommended. All DuPont Numbers are single base (Nitrocellulose) powders. Hercules "HiVel" No. 2, "Unique" and "Bullseye" are double base powders. A double base powder is one containing an appreciable quantity of nitroglycerine.

We hope that the reader, having read the foregoing matter in connection with the various powders available to the handloader, has been able to form some very concrete ideas as to his requirements. If such is not the case we trust that sufficient interest has been developed, that he will not hesitate to write to us for our suggestions as to the specific powder for his particular needs.

We carry a complete stock of powders of American manufacture. Frequently in articles on handloading, many powders not listed herein will be mentioned. In most instances, the powder has been discontinued by the manufacturer or was never generally supplied to handloaders. Hercules HiVel No. 3 has been discontinued. DuPont Nos. 1204, 25½ (never available to handloaders), 17½, 1147 and 15½ have been superseded by DuPont Nos. 4227, 4198, 3031, 4320 and 4064 respectively. DuPont No. 4759 replaces DuPont No. 80.

DuPont powders are available in the following sizes of containers; Nos. 4227, 4198, 3031, 4320, 4350 and 4064 in canisters containing one pound or in 20 pound kegs; No. 4759 in 8 ounce canisters. DuPont Bulk Smokeless and PB is packed in 8 ounce canisters and in 25 pound kegs. Hercules HiVel No. 2 and 2400 are packed in canisters containing one pound. Hercules Bullseye is packed in canisters containing 11 ounces and in 3 and 15 pound kegs. Hercules Unique is packed in canisters containing 13 ounce and in 4 and 15 pound kegs. Hercules Red Dot is packed in 8 ounce canisters and 3 and 12 pound kegs. Herco in 4 and 15 pound kegs. DuPont black sporting powders are packed in pound canisters and in 25 pound kegs.

The powders mentioned in this Handbook are manufactured by the following companies:—E. I. DuPont de Nemours Company, Military Sales Division, Wilmington, Delaware and the Hercules Powder Company, Wilmington, Delaware.

Weights of all powders and powder charges are stated in the United States as Avoirdupois. There are 7,000 grains in an Avoirdupois pound and an Avoirdupois pound contains sixteen (16) Avoirdupois ounces. The unit of weight, the grain, is the same in Avoirdupois, Troy and Apothecaries systems.

Powders furnished handloaders are of standardized lots. They develop pressures in accordance to published lists of recommended charges. The powder used in commercial ammunition, though perhaps similar in appearance, differs in standard to that which the handloader can buy. It is therefore not practical to break down factory loaded cartridges and attempt to duplicate the ballistics of the factory load by using the same weight charge of canister powder.

Pyro D. G., once obtainable from the government, is a discontinued military smokeless powder frequently used by handloaders and is similar to DuPont No. 20 and Hercules No. 308, both of which have been discontinued. Lots of Pyro D. G. vary in performance and only charges recommended on the canister should be used. The same applies to I.M.R. No. 4895 and other numbers currently being supplied by the Government and other sources. Ball powder has not been made available by the manufacturers.

When war ammunition is to be broken down, a safe manner in which to arrive at a proper load is to average the weight of the charge used in ten of these cartridges. This average charge or slightly less may then be used with the same type and weight of bullet.

The Powder Charge

The selection of a suitable powder and bullet for the type of cartridge desired has been made, we presume, in accordance with the suggestions and recommendations contained in this Handbook. The handloader is now prepared to develop a powder charge which will produce the desired results.

As the powder charge is developed two facts must be considered. The charge must not develop excessive breech pressures and accuracy of a high order should be obtained when the loaded cartridges are tested.

Breech Pressure

Breech pressure cannot be measured accurately except by employing a pressure gauge—equipment few riflemen possess. The manufacturers of powders do, however, conduct extensive tests of all of the powders they manufacture. Until recently, the results of these tests were printed and made available to handloaders by placing them on the canister in which the powder was sold and, in greater detail, in separate leaflets. This service has now been curtailed and at this time, we know of no source where such information may be obtained. The manufacturers of powders available to the handloaders do, however, advise us that they expect to continue to control, so far as good manufacturing practice is concerned, future lots of canister powders (that furnished the handloader) to insure that they will be as nearly similar in quality as possible to past and present lots. We feel, therefore, that the data furnished by the powder manufacturers in the past may be used safely in conjunction with present lots of powders. A list of charges compiled from this source of information is contained in this Handbook. It is up-to-date and reliable and we recommend that handloaders be guided by it. The charges as listed give the caliber of the cartridge, the weight and type of bullet and velocity developed. In many instances but one charge is listed for any given weight of bullet and is the maximum charge which cannot be exceeded with assurance of safety. If two or more charges are listed for the same weight of bullet the highest represents the maximum charge. If no charge is listed for the exact weight of bullet to be used, the approximate weight

of the charge can be determined by noting the charges listed for heavier and lighter bullets. It is a simple task to compare the bullet weights and listed charges and to compute the approximate charges to be used with your bullet. When computing charges in this manner it should be borne in mind that, as the weight of the bullet is increased, a corresponding reduction in the weight of the powder charge is necessary. Maximum charges are not, as a rule, the most desirable and are given only to guide the handloader with regard to the upper limit of safe breech pressure.

Almost all factory loaded cartridges are full power loads and contain approximately maximum powder charges which, in turn, produce high bullet velocities. The pressure developed by any powder charge deforms the bullet to some extent. Maximum charges cause the greatest deformation and bullet deformation is a very important cause of inaccuracy. If for any reason maximum bullet velocity is required, the maximum powder charge should be worked up as described below. The shooter is interested in developing either a nearly full power load of maximum accuracy or a less expensive, super-accurate, reduced load. Because arms differ in many particulars a charge which will prove most accurate in your arm can be determined only by experimentation. The maximum charges listed in this Handbook are of very definite value because they will develop the maximum safe breech pressure in standard arms when modern, standard components are used. They provide a starting point from which the handloader can by experimenting develop a charge which will, when used in his arm, produce a superior load for his particular shooting requirement.

How to Develop Safely the Powder Charge

We suggest that the powder charge, whether it is desired to obtain maximum bullet velocity (full power loads) or maximum bullet accuracy, be developed in the following manner.

Charges listed, if maximum, should never be used at the beginning. We recommend that the listed charge be reduced ten percent or more. This reduced charge should be loaded into at least ten cartridges. These should be fired, using a good rest, and the target retained. Watch carefully for the signs of excessive pressures as described below. If no signs of excessive pressure appear lots of cartridges may be loaded with successively heavier charges until the maximum listed charge is reached or maximum accuracy as shown by the targets has been found. Each succeeding charge should not be more than two percent heavier than the preceding one. When the desired charge is found a careful record of it should be made for this information is infinitely superior for your own guidance in future loading than that which is obtained in any other manner.

Indications of Excessive Pressures

The appearance of the fired primer has long been regarded as one of the very good indications. Formerly if the edges of the primer cup were flattened against the breech block or bolt head, pressures developed were regarded as approaching maximum. However, some brands of modern primers flatten excessively even when fired without powder charges and thus a flattened primer is not always an indication of excessive pressures. However, if upon firing a loaded cartridge a portion of the primer cup is blown out or extruded into the firing pin recess, we have an indication that maximum pressure has been reached.

Cartridge cases which are difficult to extract because of excessive expansion or which have latitudinal streaks along their sides are also, in most instances, an indication of excessive breech pressure. Another indication is the expansion of the primer pocket in the head of the case. When this happens powder gas will escape freely around the primer.

It should be noticed that, if improper primers are used or if the primers are made of weak material, metal from the primer may be extruded into the primer recess by normal loads. Similarly, soft brass cartridge cases may expand excessively

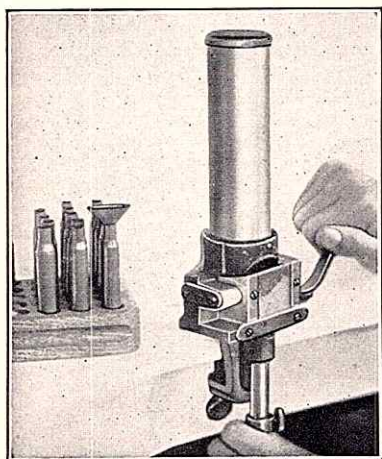
and be difficult to extract, poorly annealed brass in the cartridge case head may deform under normal pressures and lastly, good quality cases fired in oversized chambers will be expanded abnormally and develop latitudinal streaks. However, should any of these signs appear they must be regarded as an indication that in your arm, using those components, the highest permissible breech pressure has been reached. If the powder charge used is nearly a maximum one, reducing it slightly should correct the trouble. If a slight reduction in the powder charge does not correct the trouble the fault will probably be found in the components and the remedy is the substitution of proper standard components for those which have proven defective. Never continue to fire a lot of cartridges which show signs of developing excessive pressures. Any or all of these signs will appear to the observant handloader before pressures have been reached which will cause damage to the arm or endanger the firer.

We strongly recommend that the handloader develop each new load in accordance with the above instructions. This method is safe and will produce the super-accurate cartridges demanded by the modern shooter.

NOTE: The pressures developed in modern rifles by normal charges used in conjunction with lead bullets are low. Select charges from the information given in this Handbook according to the bullet velocity desired. A slight overload may damage an alloy bullet causing inaccuracy, a condition that will be readily determined by an examination of the target. Excessive, double or lack of any powder charge should be detected by an examination of the charged case before bullet seating.

Jacketed bullets may be driven at much higher velocities than those indicated in the table of Reduced Charges. Due to the nature of "bulk" smokeless powders (Unique and No. 4759), high velocities cannot safely be obtained with them. Use only progressive burning military smokeless powders to obtain high velocity loads.

The B. & M. Visible Powder Measure



The B. & M. Visible Powder Measure.

Due to its unique construction, the B. & M. Visible Powder Measure is by far the most accurate tool of its kind obtainable. Most powder measures of to-day have but one hopper which feeds directly into a measuring chamber, with the result that the height and density of the powder column in the hopper have a direct influence on the weight of the powder charge thrown. Thus a full hopper of powder throws a heavier charge than one a half or a third full. The B. & M. Visible Powder Measure overcomes this fault because the main hopper is not connected to the measuring chamber. The powder is fed from the main hopper into a secondary hopper or charger reservoir and from this into the measuring chamber. The charger reservoir is disconnected from the main hopper when it is connected to the measuring chamber. Thus the height of the powder in the main hopper has absolutely no effect on the weight of the charge thrown. This feature largely accounts for

the remarkable accuracy of the B. & M. Visible Powder Measure. Successive charges thrown by it vary so slightly in weight that only by the most careful and tedious manipulation of a set of balances can the handloader obtain more uniform powder charges. It is the most accurate powder measure available.

The Tool is designed to be clamped by means of a thumb screw to a shelf or work bench. The upper reservoir or main hopper may now be filled with powder to any desired height. As the main hopper is filled the powder runs down and nearly fills the charger reservoir which is equipped with a glass front through which the powder is clearly visible. The charge tube or measuring chamber is graduated in numbers from one to thirty-five and is easily adjusted by means of a thumb screw. A table which accompanies each tool lists all the powders available to the handloader and shows the weight in grains of the charge thrown by the measure for each kind of powder when the charge tube is set at any given graduation. Setting the charge tube at the proper graduation to throw a given charge of a certain powder requires but a few seconds. Measuring powder with the B. & M. Visible Powder Measure is equally simple. After the main powder hopper is filled and the charge tube properly set the latter is inserted in the measure as far as it will go and held in place as shown in the illustration. The lever handle is now firmly pushed to the right a full stroke, held there until the charge tube is filled, and then returned in a similar manner to its original position. The powder runs smoothly and evenly from the charger reservoir into the charge tube. The B. & M. Measure does not require and should not be pounded or hammered. The contents of the charge tube may now be funneled into a primed cartridge case. When the lever handle was moved forward the charger reservoir was first completely disconnected from the main hopper and then connected to the passage leading to the charge tube. The return stroke of the lever disconnected the charger reservoir from the charge tube and as the stroke was completed again connected the charger reservoir with the main hopper. Thus there is always a constant amount of powder in the charger reservoir when it is connected to the charge tube and the density of the powder column is the same for each successive charge. The glass front of the charger reservoir permits the operator actually to see the powder run into the charge tube, and if the charger reservoir does not refill when the lever is returned to its original position warns him that the main hopper is empty. When the charge tube is removed after the completion of the full stroke

of the lever, the operator really sees the full and accurate charge before it is funneled into the cartridge case.

NOTE: For the benefit of those handloaders loading for the "Magnums" we have developed a Charge Tube Assembly longer than standard, with graduations to 50. These will contain up to approximately 80 grains for the powders commonly used in this caliber of firearm. Also used for measuring shot in sizes 6 and smaller for hand gun shot loads. It is available on request at a slight extra charge.

MICROMETER CHARGE TUBE

We have recently developed a micrometer type of Charge Tube for the B. & M. Visible Powder Measure. These can be set to any given graduation exactly. Using this type, the handloader records the settings used with his favorite loads and, whenever he desires to duplicate them, the slide may be set exactly to perform that function. They are also very conveniently set to points anywhere between the regular graduation numbers which appear on the slide. They are available in the regular and magnum sizes at a slight additional cost as shown on our latest price list.

They interchange with the regular type we have always supplied with the B. & M. Measure. If the owner of a B. & M. Measure purchased in the past wishes to add the micrometer feature to it, he needs only order the Micrometer Charge Tube.

The B. & M. Visible Powder Measure is so remarkably accurate that the purchase of an expensive set of balance scales is unnecessary. It is safe, reliable and convenient.

Every handloader should own one of these precision instruments.

Shipping weight, 3 pounds 8 ounces.

CHECKING THE SLIDE SETTINGS OF THE B. & M. VISIBLE POWDER MEASURE

A table of "Slide Settings" which accompanies each measure has been carefully compiled and verified by testing with current lots of powders in use at the time of issue and will be found sufficiently accurate as a guide for measuring powder charges for use in all low or medium power loads. However, owing to the fact that the specific gravity of different lots of the same kind of powders varies slightly—a condition over which we have no control—the data contained herein cannot be guaranteed to be absolutely accurate. Of this feature, Wallace H. Cox, Ballistic Engineer, of the E. I. DuPont de Nemours Company remarks:

"There has always been a slight variation in the relation of the bulk to the weight of all types of propellant powders. With black sporting powders and the obsolete type of "bulk for bulk" smokeless powders, this difference ratio was less important than it is today.

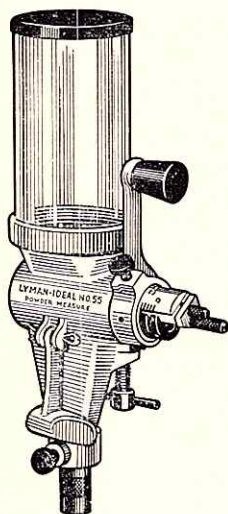
"Modern smokeless powders are designed to produce more uniform results and this is better achieved by controlling the weight of charge rather than its bulk measurement. This practice has in turn reduced the variations that existed in bulk measurements but not entirely eliminated them. Hence, each successive lot of any particular kind of canister powder will perform as the previous lots when the same approximate **weights** of charge are used. It is recommended, therefore, that after a shooter has learned to throw consistent weights of charge with his powder measure, he compares the actual weights of charge thrown at each setting of his powder measure. If he finds that the weighed charges do not check with the published table of approximate settings then he should make adjustments accordingly.

If the loader does not have an accurate balance of his own, the neighborhood druggist may be willing to help him."

From the foregoing, it will be noted that when the handloader desires to duplicate the ballistic properties of a load which he has developed and found satisfactory using a certain lot of a given kind of powder, it is advisable to check the slide setting of the B. & M. Visible Measure in order to obtain the same weight of charge when powder from another lot is used.

Note also, that when the loader is using a maximum or nearly maximum load of a given lot of powder, it may not be safe to use this slide setting when a new lot is to be used. Dangerous pressures can result from this practice. Verify the weight of charges thrown before loading high power loads from a new lot of powder. Once the correct setting is obtained, it will not be found necessary to check the weight of succeeding charges from that lot when the B. & M. Visible Powder Measure is used.

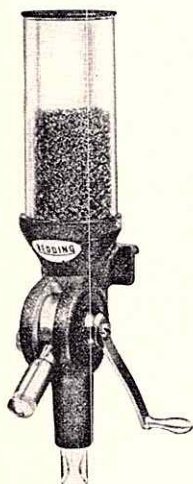
IDEAL NO 55 POWDER MEASURE



Ideal No 55 Powder Measure

This is the popular Ideal No. 55 Powder measure as manufactured by the Lyman Gun Sight Corp. and has been used successfully by handloaders for many years. It is designed to be attached to a workbench by means of a thumb screw but is also fitted with threaded drop tubes enabling the user to attach it to the Turret of the Lyman Tru line Jr. and other makes of turret type reloading tools. It handles all grades of smokeless or black powders available to handloaders. The powder chamber is of a transparent plastic which enables the user to check the level of the powder and keep it constant. It feeds directly into the cartridge cases. This tool is well made, constructed of close fitting parts for long wear. Complete operating instructions accompany each measure.

REDDING MASTER POWDER MEASURE



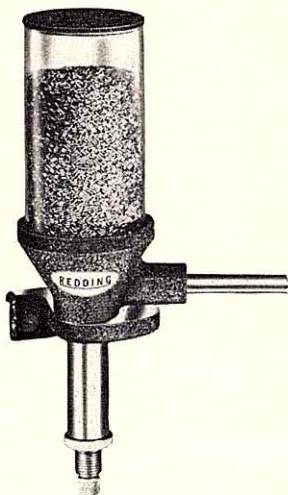
The Redding Master Powder Measure is a top quality tool designed for the most efficient, accurate and easy measurement of all powders available to the handloader in charges from 0 to 100 grains. All parts are precision machined and finished and the critical areas are chrome plated for wear resistance and rust protection.

This measure is very simple and easy to operate and is provided with a specially designed micrometer set measuring chamber with lock screw to keep the charge at the setting selected. A chart is supplied with the measure showing normal range of charges of each type of powder and the setting used to obtain these charges. Maximum and near maximum charges should be checked on a good scale. The powder reservoir is of a transparent plastic as is the drop tube thus giving a visible check on the flow of the powder to the cartridge case. The drop tube will take all calibers of cartridge cases.

It is finished in brown wrinkle enamel and is attached to a work bench by means of a bracket and screws.

Complete operating instructions accompany each measure.

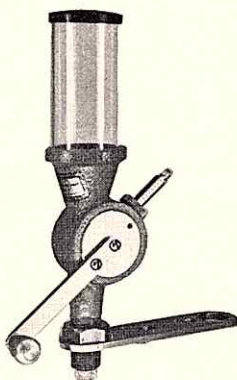
REDDING STANDARD POWDER MEASURE



The Redding Standard Powder Measure will throw accurate charges of all sporting powders with great ease and speed of operation. The measuring chamber is removable and after the charge has been thrown, the powder is poured directly from the chamber into the cartridge case. This measure has a capacity of 0 to 100 grains and is set by means of a good scale. The large capacity reservoir, chrome plated adjustable metering chamber, positive mount-bracket and attractive wrinkle finish plus low cost make the Standard Measure the first choice of the economy minded handloader.

Complete operating instructions accompany each set.

RCBS UNIFLOW POWDER MEASURE



RCBS Uniflow Powder Measure

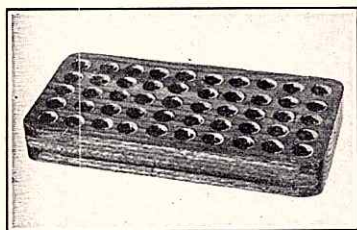
An attempt is made here to combine all of the good features of other powder measures into one.

This tool is designed to be attached to a work bench but the outside of the drop tube is also fitted with a $\frac{7}{8}$ " x 14 thread so this measure can be used in the top of a reloading press using standard size dies if desired. It handles all powders very well and has a capacity of 1 grain of Bullseye to 110 grains of 4350 without changing any parts.

The Uniflow measure comes with a numbered measuring screw which helps you to find the same charges at a later date. The powder hopper is 4" long and a 6" one is available on special order. It is fitted with two drop tubes and handles all cartridges from 22 up. The picture shows the measure with the handle in the down position. As the handle is raised the measuring chamber begins to open and as the motion of the handle continues upward the chamber is filled. As the handle comes down, reaching a horizontal position, it closes the measuring chamber and begins to open into the drop tube. This system tends to give uniform charges and does away with the chance of clogging in the drop tube.

The setting for the original charge must be determined by checking with a good scale.

Complete operating instructions accompany each measure.



Loading Blocks

Loading Blocks to hold cartridge cases during the reloading process are a necessary part of every reloaders equipment. They may be purchased from B. & M. or made by the reloader if material is available. They consist of hardwood boards, 8 x 4 x 1 inches, in which have been bored holes of the correct diameter to accept the base of the cartridge case. B. & M. furnish Loading Blocks of planed oak containing fifty holes of any caliber desired. The corners have been rounded and the blocks grooved along their

length to facilitate handling. They are usually sold in pairs. Since the base diameter of many cartridges is the same or nearly so, a certain size Loading Block will sometimes be suitable for a number of different calibers of cartridges. Therefore, we number B & M Loading Blocks as follows: No. 1—22 Hornet, 22K-Hornet. No. 2—222 Remington, 2R. No. 3—218 Bee, 25-20, 25 Remington, 30 Mauser, 30 Luger, 30 Remington, 32 Remington, 32-20, 9 m/m Luger. No. 4—357 Magnum, 38 Special. No. 5—219 Zipper, .219 Wasp, 22 Savage HP, 25-35, 30-30, 303 Savage, 32 Special, 32-40, 38-55. No. 6—220 Swift, 22-250, .243 Winchester, 244 Remington, 257 Roberts, 250 Savage, 6.5 Jap, 6.5 Mannlicher, 270 Winchester, 7 m/m Mauser, 308 Winchester. 300 Savage, 7.7 Jap, 8 m/m Mauser, 35 Remington, .358 Winchester, 45 ACP. No. 7—30-40 Krag, 300 Magnum, 303 British, 375 Magnum, 38-40, 44 Special, 44-40, 45 Auto Rim. No. 8—7.62 m/m Russian, 8 m/m Lebel, 33 Winchester, 348 Winchester, 45-70, 45-90. Order by number.

Shipping Weight, 12 ounces each.

B. & M. Loading Funnels

The powder charge must in some instances be funneled into the cartridge case. Funnels are therefore a necessary part of every reloaders equipment. B. & M. furnish aluminum and plastic funnels with mouths large enough to accept charges from scale pans, and tapered to various sizes to fit case muzzles.

Shipping weight, 8 ounces

We also furnish the FITZ make. of FAMM-O-CONE which is another type of plastic funnel. This one is made of fluorescent red duramite and fits over the necks of all calibers of cartridge cases commonly available to handloaders. See the B. & M. Price List for prices on the various funnels we stock.



No inserts —
No adjustments —
One funnel loads
full range

Lead and Jacketed Bullets

Selecting The Proper Rifle Bullet

The first projectiles used in firearms were arrows. Bullets cast from lead or lead alloys soon followed, and bullets of these materials were universally used prior to the introduction of smokeless powder. With the development of smokeless powder, bullets having a lead core but protected by an outer jacket of copper or copper alloys came into general use.

Bullets used today are of many designs, types and weights. They are the result of lengthy experimentation dating from the invention of firearms and new designs are constantly being added as they prove their worth. From this array may be chosen types and weights exactly suited for any shooting purpose. The purpose that the cartridge is to serve and the range at which it will be used largely determine the choice of the proper bullet. Considerations effecting the choice of a bullet for target shooting purposes are its design and the range over which it will be used. In choosing a bullet for sporting purposes the size and species of game, shocking power, penetration, and other factors must also receive consideration.

After having made a thorough study of the following pages on bullets, if there should remain any doubt in the mind of the shooter as to the selection of a proper bullet for his needs, we trust that he will write informing us of the type of shooting he desires to do, the caliber of his arm, and other information of similar character. We shall then be very glad to make a specific recommendation of a bullet suitable for his use.

For convenience, bullets may be divided into two classes, solid bullets or bullets cast from lead or lead alloys and those with metal jackets.

Lead Bullets

Solid or cast bullets retain their popularity for several sound reasons. Their cost is lower than that of jacketed bullets, often only a half, third or fifth as much. For many target or small game shooting purposes no jacketed bullet suits as well. Cast bullets are as valuable in modern quick twist high power rifles as in the older slow twist, black powder arms. The accuracy attained, both in scores and in size of groups with good cast bullets in good rifles is remarkable. Until the very latest and best of high velocity jacketed bullets were developed records with cast bullets had never been excelled. "Possibles" on N. R. A. targets are always practical for good barrels at any range from 25 to 600 yards, while much finer shooting, rivaling that done with special match ammunition, is obtained when special care is taken in loading. Good cast bullets serve certain purposes better than any jacketed bullet. No shooter should be without them. They are indispensable for making up thoroughly serviceable low cost loads for any rifle or revolver.

Lead bullets are adapted for use in reduced loads in modern quick twist rifles, for loads approximating full power in older slow twist calibers (38-55, 45-70, 45-90, etc.) and for reduced or full power loads for use in revolvers and pistols. They are not adapted for full power loads in modern rifles; their unprotected base edges will be fused by the hot powder gases generated by full power loads of smokeless powder and this fusing will extend past the base and up the sides of the bullet resulting in unsymmetrical bullets which are extremely inaccurate in flight. They also have a tendency to strip because they fail to follow the rifling of the barrel when driven at high velocities. Solid bullets with plain or unprotected bases cast from a proper alloy may be driven at an initial muzzle velocity of 1400 to 1500 f.s. Their range for accuracy is not greater than 200 to 300 yards.

Gas check bullets are solid bullets having bases designed to accept a shallow copper cup which protects it from being melted or fused by the hot powder gases

generated by mid-range loads of smokeless powders. These bullets are cast from a tough alloy of lead described under "Bullet Casting." Larger charges of smokeless powder may be used with these than with the plain base types. An initial muzzle velocity of 2000 to 3000 f. s. can be imparted to them and their range for accuracy is 500 to 600 yards.

Generally speaking, sharp pointed bullets should be chosen for target shooting. It is claimed that these designs encounter less wind resistance than the blunt or flat nosed designs but this advantage is slight over short ranges. The ogive or forward section of many of these bullets is so designed that, when properly seated in the cartridge case and chambered, the forward section enters the bore of the rifle, rests on the lands and is thus aligned perfectly.

At the limited velocities at which plain base lead bullets can be driven, they cannot be made to mushroom severely on game tissue. Therefore, in choosing a lead bullet for use on small or medium sized game we must place our dependence for shocking power and penetration on the weight of the bullet and the design of the point. Heavy, flat nosed bullets provide greater shocking power. Designs of game bullets range from blunt to flat points and are admirably suited for use in low power game loads. Sharp pointed bullets should not be used in game loads because of their lack of shocking power, but all of the blunt and flat nosed sporting types may be and are used extensively in target loads. Over the comparatively short ranges at which they may be used, accuracy is not measurably affected by the design of the point.

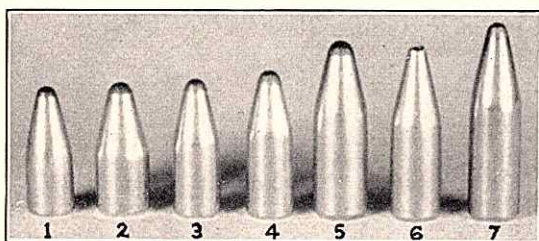
Jacketed Bullets

Progressive burning smokeless powders are capable of imparting higher velocities to projectiles than a lead bullet can withstand. Jacketed bullets consist of a lead core protected wholly or partly by a metal jacket of copper or copper alloys which is tougher and has a higher melting point than lead. This hard exterior will not strip in the rifling and is not damaged by the high pressures and hot gases generated by full power smokeless powder loads. For these reasons jacketed bullets can be driven at extremely high velocities and for long distances. The maximum velocity at which lead bullets can be driven with accuracy is 3000 f. s. while jacketed bullets are frequently driven at velocities of 3500 f. s. or more. They are of types and designs that may be used successfully in any load which the shooter desires to assemble. The accuracy attained with them is equal to that obtained with cast bullets. Jacketed bullets, as used in the U. S. A., require no lubrication and no lubricating grooves are provided. They require less care in handling than do cast bullets and ammunition is more easily assembled when they are employed.

Target Bullets

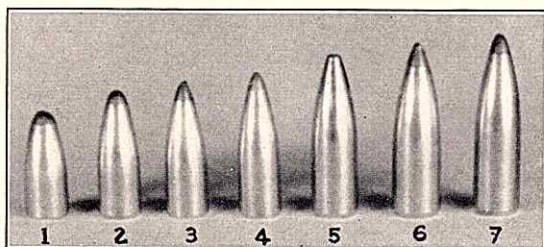
Popular Bullets Used in Target and Varmint Loads

Jacketed bullets for long range target shooting are all sharp pointed and of the full metal jacketed type. The advantage of the sharp pointed bullet becomes apparent at ranges of 1000 to 1200 yards over which many of them are used. Many of these bullets also have beveled bases, are known as the boat-tail design, and are more accurate over ranges exceeding 500 to 600 yards. Bullets of these designs should be used only on a target range provided with a good backstop or butt for they will glance or ricochet from almost any surface. Penetration of full metal jacketed bullets is extreme and exceeds that obtained with any other type. Because of their lack of shocking power, their use in American game ammunition should be avoided and is indeed unlawful in some states.



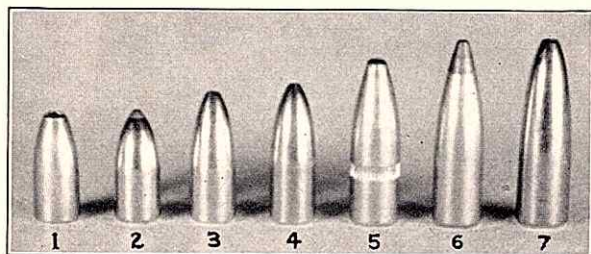
HORNADY BULLETS

1. Cal. 22 Hornet, 45 gr. Soft Point
2. Cal. 25, 60 gr. Spire Point
3. Cal. 22, 50 gr. Spire Point
4. Cal. 22, 55 gr. Spire Point
5. Cal. 25, 87 gr. Spire Point
6. Cal. 6 m/m, 70 gr. Open Point
7. Cal. 6 m/m, 87 gr. Spire Point



SIERRA BULLETS

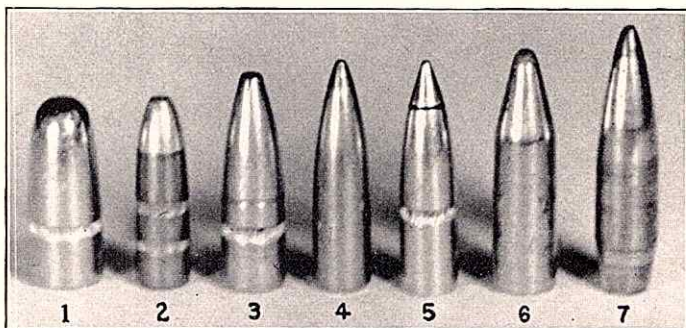
1. Cal. 22 Hornet, 45 gr. Soft Point
2. Cal. 22, 50 gr. Semi Pointed
3. Cal. 22, 50 gr. Spitzer
4. Cal. 22, 55 gr. Spitzer
5. Cal. 6 m/m, 75 gr. Open Point
6. Cal. 25, 87 gr. Spitzer
7. Cal. 6 m/m, 85 gr. Spitzer



OTHER MAKES

1. Cal. 22 Hornet, 45 gr. OP Remington make
2. Cal. 22 Hornet, 45 gr. SP Jordan make
3. Cal. 22, 50 gr. OP Jordan make
4. Cal. 22, 55 gr. OP Jordan make
5. Cal. 244 Remington, 75 gr. Pt.SP
6. Cal. 243 Winchester, 80 gr. SP
7. Cal. 25, 87 gr. OP Jordan make

Big Game Bullets



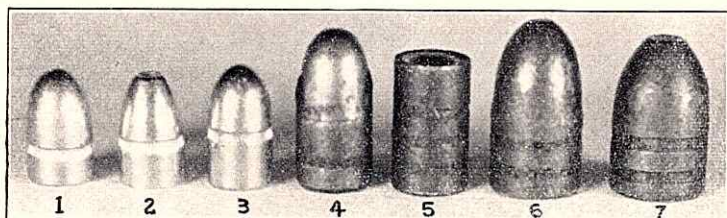
1. Cal. 35 Remington, 200 gr. SP CL
2. Cal. 257 Roberts, 100 gr. ST
3. Cal. 308 Winchester, 150 gr. Pt SP CL
4. Cal. 270 Winchester, 130 gr. Sierra SP
5. Cal. 270 Winchester, 130 gr. B Pt
6. Cal. 30, 180 gr. Hornady Spire Pt.
7. Cal. 30, 180 gr. Sierra SP Bt

Designs of jacketed bullets for sporting purposes for use in modern rifles developing velocities of 2500 to 3500 f. s. or more range through the open point, soft point, protected point and others, all in many weights. They are all intended to be driven at high velocity so that their "explosive" effect may be utilized. Shooters differ widely in their preferences and all types illustrated above have their following. In general, the lighter open point and soft points should be preferred for varmints, such as crows, woodchucks, etc., because the highest velocity attainable can be had with them and penetration is of little importance. These bullets driven at high speed break up into small pieces upon impact and therefore deliver all of their energy in a small area. They are the safest type to use in settled country; when loaded properly they rarely ricochet at ranges up to 300 yards. It will also be apparent to the hand-loader that these bullets should not be used when assembling ammunition for large game because of their lack of penetration. Heavier bullets like the 87-gr. and 100-gr. 25 caliber, and 125-gr. and 150-gr. 30 caliber available in open point, soft point or protected point, are recommended as being the ideal weight to use in full power loads for white-tailed deer, the smaller species of bear and other similar game. When loaded properly they usually stop in the body of such game and thus deliver their maximum shocking power with the very least destruction of flesh. Bullets of the 180-gr. and 220-gr. weight in soft point or open point designs available for rifles, such as the 30-1906, 300 Magnum and other similar calibers, should be chosen for use in full power loads for moose and the larger species of bear.

Full power loads employing these sporting designs of jacketed bullets should not be used on small game because of their "explosive" effect. Only reduced loads employing blunt or flat nosed bullets should be used. It must not be assumed that, because these bullets are designed primarily for sporting purposes, their accuracy is of a low order. They are all well designed and manufactured with the utmost precision, and with them remarkably accurate loads may be assembled.

Belding & Mull carry in stock all of the popular calibers and designs of jacketed bullets manufactured in U. S. A. See latest B. & M. Price List.

Selecting the Proper Pistol and Revolver Bullet

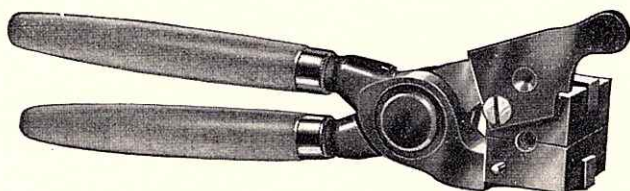


1. 30 (7.63 m/m) Mauser, 85 gr. MC
2. 32-20, 80 gr. OP
3. 30 Luger, 93 gr. MC
4. 38 Special, 158 gr. MP
5. 38 Special, 148 gr. Lead WC
6. 44 Special, 246 gr. Lead
7. 45 Colt, 250 gr. Lead

Because pressures and velocities developed by pistol and revolver cartridges are not high as compared to rifles, either lead or jacketed bullets may be used in full power or reduced loads. The design of the point has little effect on accuracy over the short ranges of pistols and revolvers. The weight, velocity at which they are driven, and the design of the point govern the shocking power as in rifle bullets. Most bullets used in pistols and revolvers are of the blunt nose design. Several of the more popular designs are illustrated above. Bullets with flat points, known by various names such as "wad-cutter," "man-stopper," etc., are steadily becoming more popular. They cut a clean hole in targets and possess, when loaded for game or defensive purposes, maximum shocking power.

IMPROVED

Ideal Single and Double Moulds



Single Bullet Mould With Interchangeable Blocks.

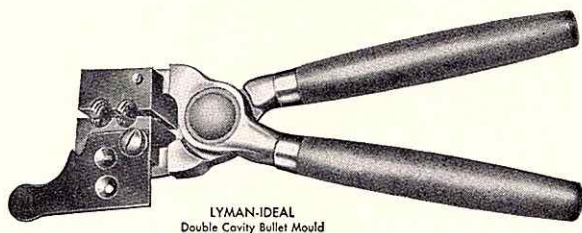
The improved IDEAL Single and Double Bullet Mould makes instant appeal because it is strong, light in weight, and easily handled. In addition, they permit the reloader to own moulds for many different bullets at the least expense, as blocks and handles will be furnished separately.

The blocks are easily attached to or removed from the handles with the aid of a screw driver. Once in place, the blocks are always in absolutely true alignment, being securely held by perfectly fitted dowel pins. The dowel pin holes extend through the block to permit easy freeing of material that might become lodged in them.

The mould blocks are made of the same special metal from which all IDEAL

moulds have always been made, a feature which allows easy "breaking-in." The neat design of the moulds has eliminated all but two screw heads, which are so placed as to be out of the way when using the moulds. The joint and handles are designed to fit the hand easily in closed position. This easy grip, combined with the light weight of the tools are improvements welcomed by the reloader.

Both moulds are perfectly made, with smooth riding joints and good workmanship throughout.



Double Cavity Bullet Mould With Interchangeable Blocks.

List of IDEAL Regular Bullets

In the following pages are illustrated and described bullets for which we can furnish moulds. This is the Standard List which includes all modern bullets, and those for which there is steady demand, the moulds for which are carried in stock. The bullets are further arranged according to caliber in groups, and at the beginning of each group is a paragraph stating the different rifles and pistols for which the bullets are adapted. The reader should consult the Table of Charges for the proper powder charge for each bullet in each caliber of rifle, but much pertinent data relative to reloading is given under each description of a particular bullet. Where a specific bullet is not mentioned in the Table of Charges the shooter can readily select a proper charge for it by interpolating between charges for bullets of lighter and heavier weight.

The listing of Ideal bullets herein names only the more popular numbers. For a complete list of all designs available plus much valuable loading data send \$2.00 for a copy of the Lyman book "Handbook of Cast Bullets".

When ordering moulds, be sure to state what kind is desired, whether Single, Double or Armory, and be especially particular to give the number of the bullet and the weight, as shown in the illustration.

Cast Bullets. There are a number of individuals who make a business of casting, lubricating and sizing bullets and offering them for sale. Their advertising will be found in the leading magazines published for shooters such as the American Rifleman.

Explanation of Bullet Numbers

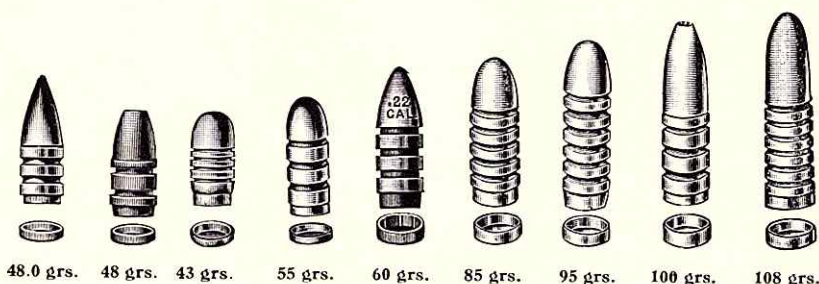
The first three figures indicate the standard diameter (sized) of the bullet in thousandths of an inch. Numbers after first three digits indicate the cherry number. The special kind of cutter used in making moulds for bullets, is generally referred to as cherry.

Generally, bullet moulds are made to cast bullets larger than standard to permit sizing to the diameter most commonly used in a given arm. While there are exceptions, most cast bullets are sized .002" to .003" larger than groove diameter. Some shooters prefer to use cast bullets sized to groove diameter and some designs are furnished to permit this. They are designated as "U" moulds.

The following are available as "U" Moulds;

U225450	U311316	U321297	U358242
U225438	U311334	U356402	U358246
U225415	U311359	U357446	U358250
U257418	U311329	U358345	U375449
U257388	U311291	U358425	U42798
U257312	U311299	U358416	U429215
U280412	U311278	U358432	U429244
U280468	U311241	U358429	U452423
U287346	U311413	U358311	U452460
U3118	U311466	U358495	U452374
U311467	U311284	U358271	U454190
			U457124

225450 225415 225438 225462 228367 245496 245497 245498 245499



.22 and 6M/M Caliber Cartridges

225450. Pointed gas-check bullet which has proven very accurate in the Swift and other high velocity rifles.

225415. Standard Bullet for Neidner Baby Hi-Power, weight about 48 grs. Size to .225. Use hard alloy 1 to 10. Suggested charge 4.5 grains of Du Pont No. 4759 powder. Also very accurate in the .22 Hornet.

225438. This bullet was designed by Mr. H. Guy Loverin, especially for the .22 Hornet. It follows closely the form of the .22 Long Rifle bullet and is very accurate.

228367. Standard gas-check bullet for .22 Savage H. P. cartridge. Gives plenty of range, accuracy, and killing power for all small and medium game and does not wear out barrels. Use Ideal Bullet Metal No. 2 or 1 part Tin to 10 of Lead, and size to .228". Seat with only the two base bands in neck of case.

225462. A 55 gr. round nose gas check design excellent for small game and varmints.

Nos. 245496, 245497, 245498 and 245499 are the 6m/m bullets currently available.



.25, .250-3000 and .257 Caliber Cartridges

.257" is the standard groove diameter of all American .25 caliber rifles, for the .250-3000 Savage High Power and .257 Roberts. All bullets numbered .257" are cast large enough so that they can be sized to .257" for use with smokeless powders.

25720. Standard Bullet. This is the regular old standard .25 Stevens bullet. Does good work in all .25 caliber rifles with medium charges of Du Pont No. 4759 powder or Hercules "Unique" powder. Good for black powder also. In ordering mould state for what weight bullet.

257231. Standard Bullet. Fine bullet for .25 caliber High Power Rifles with Kephart dirt scraping groove and wide bands to stand the quick twist. In ordering bullet mould state for what weight bullet.

257283. Standard Bullet. The best plain base lead bullet for .25-20 repeating rifles. Crimping groove to prevent tubular magazine forcing bullet into case when powder charge does not fill case. If used single loading will be slightly more accurate if seated in case only to middle band. Good in all .25 caliber rifles with medium charges of smokeless powder.

257312. Gas-check bullet which has been extremely successful in .25-20 repeating and single shot rifles. Very accurate especially when seated in case only to middle band.

257325. Standard Bullet. Gas-check bullet fine for .25 Rem. Auto. rifles.

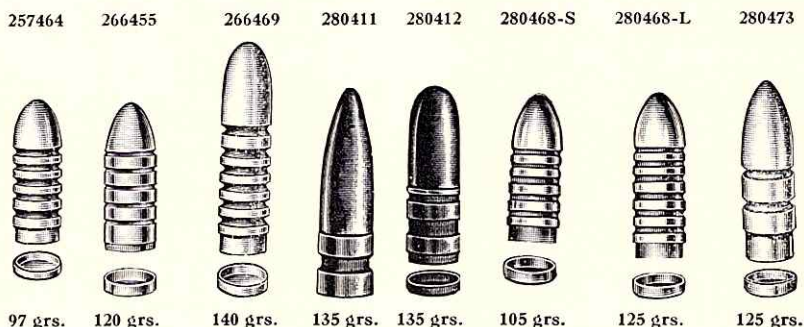
257388. Standard Bullet. A fine spitzer pointed gas-check bullet for the .250-3000 Savage High Power Rifle. We have had excellent reports from this bullet. Seat as far out of case as possible and still have cartridge work through magazine.

257418. Standard Bullet for .257 Roberts. Since originally designed the lubricating grooves have been widened and the bullet has proven successful in the .257 Roberts and other .25 caliber rifles with quick twist.

257420. 25-20 Bullet. Designed primarily for Australian requirements for jack-rabbit shooting, etc. Resembles closely the new factory high-speed bullets in accuracy and weight.

257463. New Loverin Bullet for all 25 caliber rifles.

257464. New Loverin Gas-Check Bullet in caliber 25.



6.5 m/m and .270 Caliber Cartridges

266454. Gas-Check Bullet. 6.5 m/m, 100 grain gas-check bullet. Same bullet as 266455 except shorter. (Not illustrated)

266455. Gas-Check Bullet. 6.5 m/m 118 grain gas-check bullet for American or Jap rifles. Designed by Guy Loverin.

266469. Heaviest Bullet for Jap rifle. Also a Loverin design.

280411. Standard Bullet for .270 Winchester rifle. These sharp pointed bullets are fine for small game such as grouse and squirrels. Should be sized to .280", and cast of hard Ideal alloy or 1 part Tin to 10 of Lead.

280412. Gas-Check Bullet for .270 Winchester rifle. Fine for target shooting up to 200 yards or for larger species of small game. These bullets will not wear out your barrel. Size to .280". Seat with plenty of bullet projecting beyond mouth of case.

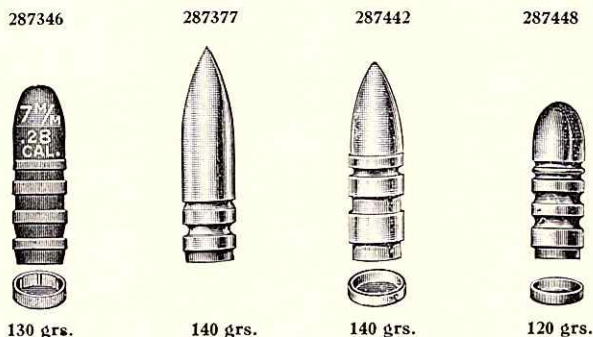
280468-S. Loverin design for .270 Winchester.

280468-L. A heavier Loverin design for .270 Winchester.

280473. A 125 gr. Gas-Check design.

.28 and 7 m/m Caliber Cartridges

The .287 series of bullets are for the Stevens and Pope .28 caliber rifles, and for all 7 m/m rifles. For .28 caliber rifles, bullets should be sized to .285", and cast about 1 to 20, Tin and Lead. For 7 m/m rifles, size to .285" to .287" and cast of hard Ideal alloy or 1 to 10.



.28 and 7 m/m Caliber Cartridges (Continued)

287346. A fine gas-check bullet for 7 m/m rifles. Seat bullet as far out of case as possible and still have cartridge work through magazine. Accurate to about 400 yards. Fine for target shooting or for the larger species of small game. These bullets will not wear out your barrel.

287377. This is an excellent Spitzer gas-check bullet for use in 7 m/m rifles. It may be used with charges developing up to approximately 1800 f. s. The bullets should be seated friction tight in the case to a depth that will give the cartridge an over-all length of not more than 3.060".

287442. Gas-check bullet for all 7 m/m rifles.

287448. This bullet was designed by Mr. H. Guy Loverin. It is very accurate in the 7 m/m.

.30, .32 and 7.65 m/m Caliber Cartridges

.308" is the standard groove diameter of all .30 caliber rifles, and also for the .303 Caliber Savage. All of our .308 or .311 series of bullets are suitable for such rifles. For almost all .30 caliber barrels these bullets should be sized to .308"- .311", the bullets all being cast sufficiently large for this purpose. Occasionally one has a .30 caliber rifle with a very tight, specially made chamber, and for such these bullets should be sized to about .308". The .303 British, Enfield and Ross rifles, and the 7.62 m/m Russian rifles have groove diameters running about .311", and for these rifles these bullets are suitable if sized to a full .311", or if the groove diameter of these rifles is found to be larger than .311", then we can furnish larger dies for the Ideal Lubricator and Sizer to resize to the diameter desired. The lighter bullets can also be used in .32-20 rifles.

311241. Standard Bullet. Perhaps the most suitable all around short range bullet for use in all .30 caliber rifles. Does most excellent work in all rifles with groove diameter from .308" to .311". Should be sized to .308", for rifles having very tight chambers. Seat so mouth of case comes just to bottom or level groove below the upper dirt scraping band. For tubular magazine rifles, crimp mouth of case in the bevel groove. This bullet does very accurate and reliable work, and is good up to 200 yards.

311241



125 grs.

311227



SR

311245



311252



77 grs.

311278



197 grs.

311227. Standard Bullet for .30 Luger and .32 (7.65 m/m) Mauser Automatic Pistols. Should be cast 1 to 10 Tin and Lead. Powder charge $3\frac{1}{2}$ grains Hercules Bullseye. May also be used in various .30 caliber rifles for short range.

311245. Designed especially for U. S. Marine Corps for 25 yard gallery practice with the Krag rifle. Size to .311". Powder charge $3\frac{1}{2}$ grains weight Hercules Bullseye. Seat bullet so neck of case covers two lubricant grooves. This bullet is highly satisfactory for gallery and short range work in any .30 caliber rifle, particularly Springfield, Krag and Russian arms.

.30 and .303 Caliber Cartridges

311252. Standard Bullet for .32 Colt's and .32 Savage Automatic Pistols. Cast of Ideal Bullet Metal No. 2 or 1 part Tin to 10 of Lead. Weight of bullet about 77 grains. Proper powder charge is 2.2 grains weight Hercules Bullseye powder. The users of .30 caliber rifles will find this bullet with a charge of $3\frac{1}{2}$ grains weight of Hercules Bullseye powder one of the finest for 25 yard indoor shooting or small game. It is very accurate and is one of the most economical loads for 1 pound of this powder will load 2,450 cartridges.

311278. Standard Bullet for .30-40 Krag rifle. Also can be used in Springfield rifles. Seat so mouth of case covers second groove from base. Use 12 to 14 grains Du Pont No. 4759 powder. Larger charge than 14 grains will cause fusion. This is the bullet recommended by Dr. Hudson for target work up to 200 yards. Fine for rapid fire.

311284



210 grs.

311291



170 grs.

311329



175 grs.

311334



190 grs.

.30 and .303 Caliber Cartridges (Continued)

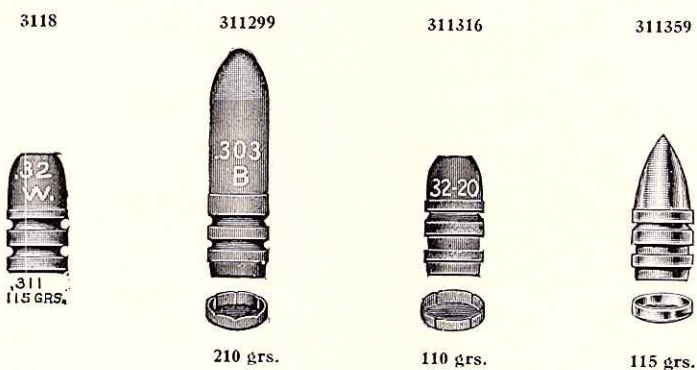
311284. This bullet is intended for use in Krag rifles, and has done most successful work up to 600 yards. It was extremely popular on all National Guard ranges prior to the adoption of the Springfield, and was used for qualification and training purposes to reduce the cost of ammunition and decrease recoil in training recruits. Seat in case so as to just cover second lubricating groove from base.

311291. Standard Bullet for .30-30, .303 Savage and .30 Rem. Auto. rifles. Size bullets to .311". Cast of Ideal alloy or 1 to 10 Tin and Lead. Seat bullets so mouth of case just comes to the band below the bevel groove, or for tubular magazine rifles slightly crimp mouth of case in the bevel groove. An exceedingly satisfactory bullet which shoots with great accuracy and does not wear out your barrel.

.30 and .32-20 Caliber Cartridges

311329. This is our standard bullet for .30 Springfield. Spitzer point gas-check bullet. A charge of 17 grains Du Pont No. 4759 gives about 1400 ft. seconds with this bullet, with good accuracy.

311334. Gas-check bullet for .30 Springfield. A most successful bullet. Shoots with splendid accuracy up to 600 yards, and does not wear out the barrel. Most suitable for military shooting and recruit qualification. Makes a great saving on the ammunition bill. Seat bullet so mouth of case comes midway up second band from base. No crimp. Size bullets for Springfield to .311". We recommend this bullet most highly for use at ranges over 200 yards.



.30 and .32-20 Caliber Cartridges (Continued)

3118. Standard Bullet for .32-20 W. C. F. rifles and revolvers.

.30, .32-20 and .303 Caliber British Cartridges

311299. Standard Bullet. Gas-check bullet for .303 British and Ross rifles. Excellent for ranges up to 600 yards. Seat so case just covers lubricating grooves.

311316. Gas-check bullet for high velocity in .32-20 rifles. Gives much higher velocity in such rifles than can be obtained with plain base bullets. Can be seated with same tools as 3118.

311359. A gas-check bullet which is fine for small game shooting in .32-20 rifles, when the cartridge is used single loading, not through the magazine. High velocity but a sharp point which does not mangle or tear small game. Same powder charges as for 311316. Can also be used in all .30 caliber rifles.

NOTE: Excellent bullet for 30 MI Carbine with 11 Grain of Hercules 2400 powder.

311365



198 grs.

311413



165 grs.

311414



150 grs.

311465



120 grs.

311466



150 grs.

311467



175 grs.

.30, 32-20 and .303 Caliber British Cartridges (Continued)

311365. This gas-check bullet designed by F. W. Kachelries gives more bearing surface than standard bullet 308329, along with added grease groove.

311413. The Squibb gas-check bullet for the Springfield and other .30-06 rifles. Perhaps the most accurate gas-check bullet yet produced. Excellent for target practice up to 600 yards. Has also been largely used for small game shooting in the Northwest. Powder charge 16 grains DuPont No. 4759 powder.

311414. Standard Bullet for Savage .300 cal. rifle. Gas-check bullet designed like factory bullet to fit the throat of Savage .300.

311465. Loverin design for 30 caliber.

311466. Loverin design for 30 caliber in medium weight.

311467. Heaviest Loverin design for 30 caliber.

.32 Caliber Cartridges

.313" is the standard diameter of bullets for the .32 Smith & Wesson Short, .32 Smith & Wesson Long, and .32 Colt's New Police cartridges.

31357. Standard Bullet. This is for the .32 Colt's New Police or .32 Smith & Wesson Long Powder charge 2.5 grains weight Hercules Bullseye powder, or 12 grains F F F black powder.

313226. Standard Bullet for .32 Smith & Wesson Long. The case crimps in the bevel groove, which prevents the bullet from receding. Grooved cases are not required. The band in front of the case makes additional length of bearing. Powder charge 2.5 grains weight Hercules Bullseye powder.

31357



100 grs.

313226



95 grs.

313249



85 grs.

313445



95 grs.

319247



155 grs

.32 Caliber Cartridges (Continued)

313249. Standard Bullet for .32 Smith & Wesson. Seat same as **313226**. Powder charge 2 grains weight Hercules Bullseye powder.

313445. Wad Cutter Bullet for .32 S. & W. Long.

.319 is supposed to be the standard diameter for all .32-40 rifles, and bullets sized to that diameter will do good work when black powder is used. But the majority of these rifles have a groove diameter of about .3205", and as a usual thing, particularly if smokeless powder is used, much better results can be had when bullets are sized to .321". Bullets .321" are a necessity in .32 Winchester Special and .32 Remington Automatic rifles.

319247. Standard Bullet for .32-40. The case crimps in the forward groove and prevents the bullet receding into the case when smokeless powder does not fill the case. Use 38 grains F g black or 12 grains Du Pont No. 4759. This is the best lead bullet for use in .32-40 magazine rifles, but in .32-40 single shot-rifles, where the bullet does not have to be seated so deeply in the case, we believe that better results can be obtained from **321232**.

319295



175 grs.

323366



180 grs.

323378



235 grs.

321232



170 grs.

321297



181 grs.

.32 and 8 m/m Caliber Cartridges

319295. For .32-40 High Power Repeating Rifles. Bullets should be cast of No. 2 Ideal Bullet Metal, and will weigh about 174 grains. Muzzle velocity about 2,000 f. s. This is a very satisfactory high power load in .32-40 repeating rifles, and the wear on the barrel is practically nil. Muzzle of case should be slightly crimped in front groove. For gas-check bullet for .32-40 single shot rifles see **321297**.

323366. For 8 m/m. Spitzer point gas-check bullet. Can be sized to .323".

323378. For 8 m/m. Blunt nose gas-check bullet. Can be sized to .323".

321232. Standard Bullet for .32 Winchester Special. The first groove is a dirt catcher. For tubular magazine rifles case should be crimped in second groove to prevent bullet receding. This bullet is also the best bullet for single shot .32-40 rifles where bullets are to be shot from case. Load with several bands projecting from case, and size to .321". Use 13 to 15 grains Du Pont No. 4759 powder.

321297. Splendid gas-check bullet for .32 Winchester Special and .32-40 single shot rifles. Extremely accurate, and does not wear the barrel. In .32 Winchester Special tubular magazine rifles muzzle of case should be slightly crimped into front groove to prevent bullet receding into case. This bullet also for use with 8 m/m Lebel French army rifle.

321317



154 grs.

323470



160 grs.

323471



210 grs.

321427



140 grs.

350447



190 grs.

.32 and 8 m/m Caliber Cartridges (Continued)

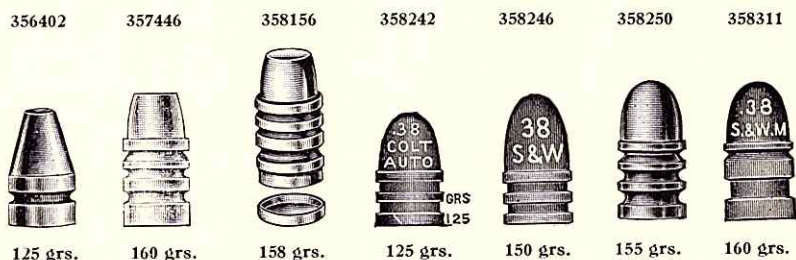
321317. Standard Bullet for rifles using the .32 Remington Automatic Rimless cartridge. Crimp in bevel groove, and size to .321".

321427. A bullet designed to fill the demand for a light gas-check bullet for 32-40 and .32 Special cartridges. Weight, 140 grains.

323470. New Loverin bullet for caliber 8 m/m Mauser.

323471. Heavier Loverin design for 8 m/m Mauser.

350447. Standard Gas-Check Bullet for .348 Winchester.



.35 and .38 Caliber Cartridges

356402. Standard Bullet for 9 m/m Luger. Very accurate.

357446. Standard Bullet for .357 Magnum.

The .358" series of bullets are for .35 Remington Automatic, .35 Winchester, .35 Newton, .35 Whelen, and .35 Magnum rifles. Also for .38 Colt's Automatic and .38 Smith & Wesson cartridges. Rifles of these calibers differ slightly in groove diameter.

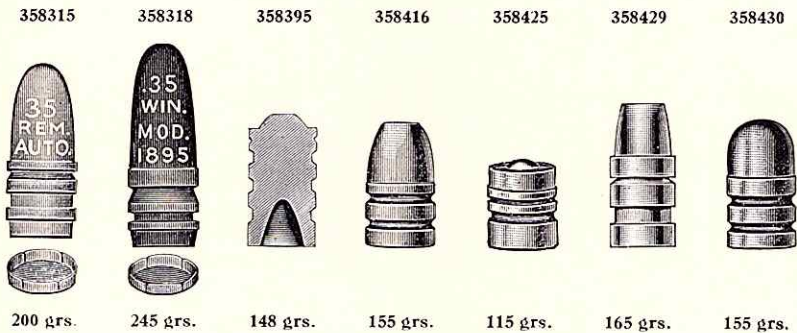
358156. The Thompson 158 gr. gas-check bullet.

358242. Standard Bullet for .38 Colt's Automatic Pistol. Cast of 1 part Tin to 15 Lead, Powder charge 4 grains weight Hercules Bullseye powder. Very satisfactory load and much cheaper than factory ammunition. Can be furnished with one band shorter for .380 Colt Automatic, 107 grain.

358246. Standard Bullet for .38 Smith & Wesson revolver. Case to crimp in top groove preventing bullet from receding. The extra band in front gives a longer bearing for the rifling. Powder charge 12 grains F F F g black, or 2 grains weight Hercules Bullseye powder.

358250. An excellent bullet for the .38 Special. Many reloaders prefer this bullet to 358311 because of the better distribution of lubricant. Can be used with all charges recommended with 158 grain bullets in this caliber.

358311. Standard Bullet for revolvers using .38 S. & W. Special and .38 Colt Special Cartridge. These two wide bands are strong and hold the rifling well. Case should be crimped in bevel groove.



.38 Caliber Cartridges

358315. Standard Bullet for .35 caliber Remington rifles. High velocity and very fine accuracy, with less wear on the barrel. For autoloading and tubular magazine rifles crimp lightly in bevel groove. These bullets may also be used in other .35 caliber and 9 m/m rifles.

358318. For .35 caliber Winchester Model 95 rifle. Excellent accuracy, with light recoil, and no wear on the barrel. Good killing power on almost all big game. Can also be used in .35 Whelen and .35 Magnum rifles. For .35 Magnum use 2 grains more powder than given for .35 Winchester.

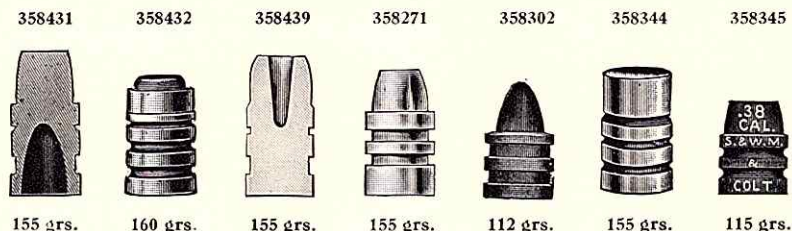
358395. This is an excellent mid range bullet for .38 Special revolvers and should be seated deeply in the case which should be crimped in the forward groove. The hollow base provides air space to compensate for the extra deep seating of the bullet. This bullet was designed by Ed. McGivern of Lewistown, Montana and we understand that it is the bullet from which the design of the Remington mid-range sharp shoulder bullet was taken. Also available as a flat base design and known as No. 358495.

358416. Colt special type used to same sizing diameter and with same charges as **358311**. The flat point is desired by many humane societies for purposes of animal destruction. A very accurate and satisfactory bullet.

358425. This bullet is highly recommended by Sergeant J. H. Young of the Portland Police Department, one of the best police shots in the United States. Sergeant Young states that for indoor shooting with a charge of about $2\frac{1}{2}$ grains of Bullseye this is not surpassed in accuracy by any other wad cutter bullet of corresponding light weight. Designed originally by F. L. Sanders of Gladstone, Oregon. 110 grains.

358429. Keith solid base solid point bullet.

358430. A very satisfactory .38 Special bullet weighing 158 grains designed by John Leonard of Avon, Conn.



.38 Caliber Cartridges (Continued)

358431. This bullet is identical with **358429** except it has hollow base to reduce the weight. 160 grains. Designed by Elmer Keith.

358432. A wad cutter type of bullet for the .38 Special designed by H. A. Nott. Weight, 155 grains. This bullet cuts a clean hole although the corners are slightly rounded.

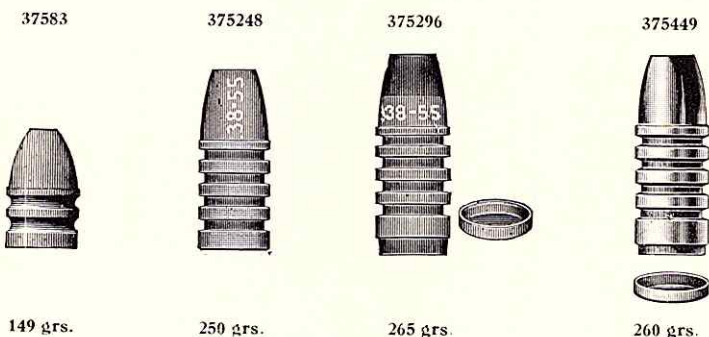
358439. Keith hollow point bullet. This is probably the most popular of all .38 Special hollow point bullets. Very accurate and a good game bullet.

358271. For .38 Special revolvers. Designed by B. F. Wilder, and recommended by A. L. A. Himmelwright, former president of the United States Revolver Association. Weighs about 150 grains. Mould can also be furnished to cast bullet with base band about half as wide, weight about 130 grains. These bullets are accurate and cut a large, clean hole in the target. Should be crimped in the middle of the forward band or if the cases are resized, it may be crimped over the front edge of forward band. Size .358".

358302. For .38 S. & W. Special revolvers. Bullet as illustrated, cast of 1 part of Tin to 25 of Lead, will weigh about 112 grains. It is very accurate for short range and cuts a large clean hole in the target. Designed by A. L. A. Himmelwright. (Can also furnish a mould to cast bullet with base band about as wide again, weighing about 130 grains.)

358344. Square nose bullet for .38 S. & W. Special revolvers. Cuts a clean hole in the target, giving the shooter full value for his shot. Also has excellent killing power.

358345. Another wad cutter bullet for the .38 S. & W. Special revolvers. Designed by J. B. Crabtree of the United States Revolver Association. When cast of 1 part Tin to 30 of Lead weighs about 115 grains, and is a nice short range bullet.



.38-55 Caliber Cartridges

.375" is supposed to be the standard for all .38-55, .38-56, .38-70, and .38-72 rifles. As a matter of fact almost all of these rifles have a groove diameter of about .379" and as a rule, particularly for use with smokeless powder, these bullets should be sized to that diameter, being cast large enough for this purpose. The .375 Magnum rifle, however, has a groove diameter true .375", and bullets intended for use in that rifle should be sized .375". It should be noted that the .38-55 cartridge is really misnamed. Originally the cartridge would hold 55 grains of black powder, when made with very thin head case, but afterwards the case was thickened, and these cartridges have a black powder capacity of only 48 grains when a 255 grain bullet is seated to standard depth.

37583. Standard .38-55 short range bullet. Powder charge 20 grains F F g black powder, or 7 grains weight Du Pont No. 4759, or 5 grains Hercules Unique.

375248. Standard Bullet for .38-55, .38-56, and .38-70 Winchester For tubular magazine rifles case should be crimped in forward groove

375296. For .38-55 High Power rifles having nickel or smokeless steel barrels. To be cast of Ideal Alloy No. 2, or 1 part Tin to 10 parts Lead, and sized to .379". Crimp case in forward groove for use in tubular magazine rifles. Very accurate up to 200 yards, and an excellent killer on large game. This bullet will not wear out the barrel.

375449. This bullet is for short range medium power loads in the .375 H. & H. Magnum.

40143



170 grs.

40188



175 grs.

410426



240 grs.

412263



290 grs

.38 Caliber Cartridges (Continued)

40143. Standard Bullet .38-40 for use in various rifles and revolvers of this caliber. Note that while named .38 caliber, the groove diameter of these weapons is about .400".

40188. This bullet for the 38/40 has proved very successful. Designed by Douglas Sorenson. Mould can be furnished in H. P. design.

.40 Caliber Cartridges

.403" is the standard size of bullet for nearly all .40 caliber rifles—Sharps, Ballard, Remington, Winchester, Marlin, Colt's and Stevens. The .40-60 Marlin and Colt's cases are not the same shape as the .40-60 Winchester, and they require different tools. The old .40 Bullard is .413", and the .40-72-330 Winchester is .406"

410426. Standard Bullet for .401 Caliber Winchester. Weight, 250 grains.

412263. Standard Bullet for the .405 Winchester and .400 Whelen rifles. It has the popular Kephart dirt catcher groove. The case may be crimped into the groove just below the forward band, but better accuracy can be obtained by seating the bullet in the case friction tight without crimp.

42798



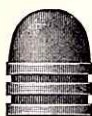
205 grs.

427103



400 grs.

429106



175 grs.

429220



175 grs.

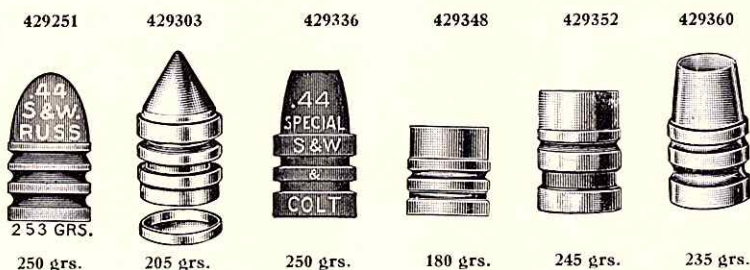
.44 Caliber Cartridges

42798. Standard Bullet. This is the regular .44-40, or .44 W. C. F. bullet for the many rifles and pistols of this caliber. For most rifles and revolvers it should be sized to about .428". About 210 grains.

427103. Bullet designed by C. M. O'Neil for the 404 Jeffries. Made to size .424".

429106. A light bullet for revolvers taking the .44 S. & W. Russian cartridge. Preferred by many for medium ranges on account of its light recoil.

429220. For .44 S. & W. Russian revolvers, designed by A. L. A. Himmelwright, former president, United States Revolver Association, especially to cut a clean, full sized hole in the target and give the shooter the full value of his shot. Known as the "wad cutter bullet." Should be cast of 1 part tin to 20 of lead.



.44 Caliber Cartridges

429251. Standard Bullet for revolvers taking the .44 S. & W. Russian cartridge. Case should be crimped in the bevel groove. This is also our standard bullet for revolvers taking the .44 S. & W. Special cartridge.

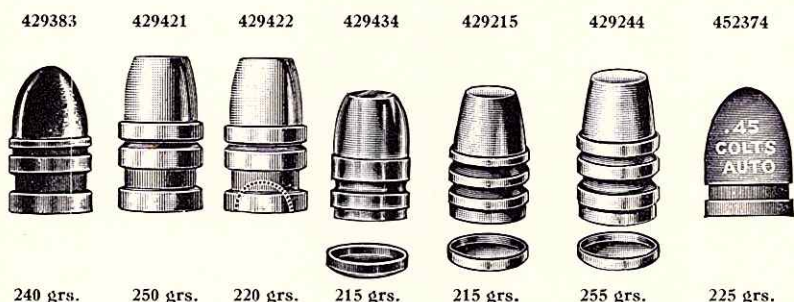
429303. Designed by Carl F. Hudson and known as "Hi-Velo-Pen" (for High Velocity and Penetration). Better penetration than factory 44 Magnum load claimed.

429336. For .44 S. & W. Special revolvers. Made for C. E. Hearst of the Boston Revolver Club. Cuts clean hole in target, and has fine stopping power on game.

429348. Square nose bullet for .44 S. & W. Russian and Special revolvers. Is quite accurate and cuts a large, perfect hole in the target.

429352. Square Nose bullet for .44 S. & W. Russian and .44 S. & W. Special revolvers. Made for M. L. Holman of St. Louis. Cast 1 part Tin to 30 of Lead.

429360. Designed by Boser for 44 special.



.44 and .45 Caliber Cartridges

429383. For .44 S. & W. Special revolvers. Designed by Harry D. Frisbee, 71st Regt., Veterans Association, New York.

429421. .44 Keith special bullet. Designed by Elmer Keith and one of the most up-to-date .44 special bullets available and is extremely accurate. Recommended charges are 4.0 to 5.0 grains of Bullseye. Designed to size .431. Moulds ordered will be furnished this diameter unless otherwise specified.

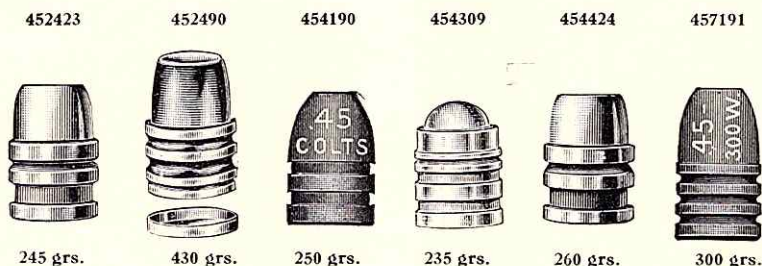
429422. .44 Keith special bullet, hollow base. Also designed by Elmer Keith. Somewhat lighter than **429421**. Gives a slightly flatter trajectory with same charge. Has same bearing in barrel and same accuracy as above bullet. Recommended charges are 4.0 to 5.0 grains of Bullseye.

429434. Gas-check bullet for .44-40 rifles. 26.0 grains of No. 2400 makes an excellent short range game load.

429215. The Thompson 215 gr. gas-check bullet.

429244. The Thompson 245 gr. gas-check bullet.

452374. Standard Bullet for .45 Colt's Automatic Pistol, Government Model. See Table of Pistol Charges. Designed by Lincoln Riley, Wisner, Nebraska.



.44 and .45 Caliber Cartridges (Continued)

452423. .45 auto rim bullet designed by Elmer Keith. Band and lubricating grooves designed to give best results in Model 1917 revolvers, when reloading auto pistol or auto rim cases. Recommended charge is 4.5 grains of Bullseye.

452460. Caliber 45 ACP 200 grains Wadcutter (not illustrated).

452490. A gas check bullet designed for the 45 Auto Rim by Roy Thompson.

454190. **Standard Bullet** for the .45 Colt's Frontier Revolver.

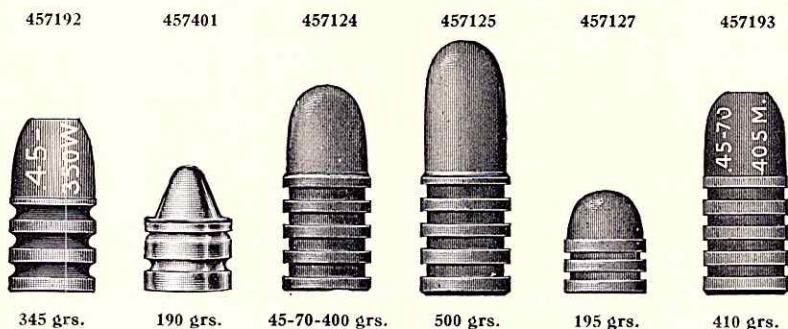
454309. Recommended to those who wish a sharp shoulder wad cutter bullet for the .45 Colt revolver.

454424. Bullet designed by Elmer Keith for the .45 Colt single action revolvers although may be used in .45 Colt New Service arms as well. Recommended charges are 5.0 grains of Bullseye.

.45 Caliber Winchester and Springfield Cartridges

In black powder days a very large number of repeating and single shot rifles were made for various .45 caliber cartridges such as: .45-70 U. S. Govt., .45-75 Winchester, .45-90 Winchester, and .45-125 Winchester Express. The groove diameters of these rifles, and also of the old .45 Springfield varied from .456" to .458". All our .456 and .457 series of bullets are cast slightly oversize so that they can be sized to any of these sizes. It is well to measure the groove diameter of the barrel before ordering sizing dies. Many of the old .45 caliber Sharps rifles had a groove diameter of from .451" to .453".

457191. **Standard Bullet** Regular factory bullet for .45-60, .45-90, and .45-125 Winchester Express.



.45 Caliber Winchester and Springfield Cartridges (Continued)

457192. .45-75 Winchester bullet.

457401. Originally designed for the .455 Webley this bullet has proven very popular in the .45 Colt. It is a wad-cutter bullet and can be sized to .454 inch. Case should be crimped in the crimping groove provided.

457124. Standard Bullet, 405 grain for the .45-70 cartridge, and was usually used in the .45 Springfield carbine. Is also an excellent bullet for elk, moose, and bear.

457125. Standard Bullet, 500 grain, used by the Army prior to about 1892 in the .45 caliber Springfield rifle. With 70 grains F g black powder, and cast 1 part Tin to 16 of Lead, this bullet gave excellent results up to about 800 yards. It requires that the barrel have a twist of rifling at least as fast as 1 turn in 22 inches to spin it steadily.

457127. This was a very popular short range and small game bullet in .45-70 rifles. Powder charge 30 grains F g black powder.

457193. This is the regular .45-70-450 Marlin bullet. It is one of the most successful bullets made for .45 caliber single shot rifles with quick twist rifling, 1 turn in 22 inches or faster. In single shot rifles it should be seated with about two grooves outside the case, which permits it to extend well up into the throat of the rifling, and permits the use of a larger powder charge of F g black powder. Cast 1 part Tin to 10 Lead, and size to exact groove diameter. Clean the bore every ten shots, and this will be found a most accurate load in single shot rifles. Fine for the old .45 Springfield.

Moulds For Round Balls

Lyman Ideal Moulds for round balls can be supplied in these diameters:

.244, .257, .285, .295, .300, .308, .311, .313, .319, .323, .330, .345, .350, .358, .360, .370, .375, .380, .389, .400, .403, .410, .420, .424, .429, .437, .440, .445, .451, .454, .457, .465, .470, .475, .485, .490, .498, .500, .509, .512, .515, .520, .526, .535, .550, .562, .575, .589, .596, .600, .615, .625, .635, .648, .662, .678, .690, .715, .760.

Venting Moulds

Anyone can vent a Mould. It is done with a small three cornered file. A very shallow score is cut in the face of the block leading into the groove which does not cast fully and sharply. The score must be of a mere hair's depth as it reaches the bullet cavity, but should be deeper at the outer edge. Never vent a Mould unless it becomes absolutely necessary for, unless done carefully, there may be a slight burr along the edges of the score which will prevent the blocks closing properly. Few Moulds require venting when bullet metal is properly alloyed of fine materials and the temperatures of bullet metal and mould are correct.

Bullet Casting

Bullet Metals

A Bullet Mould, a Melting Pot, Mallet and a Dipper with nozzle are the tools necessary for bullet casting. A gas stove or small electric furnace serve excellently for heating bullet metal because the temperature can be regulated exactly. A gasoline camp stove is almost as good and a kitchen stove with a coal fire is not far behind.

Pure lead is soft and is used only for making bullets for old models of rifles. Lead 20 parts and block tin one part makes a useful alloy for use in all rifles having a twist longer than fourteen inches, except where velocity is very high. Tin makes lead flow better and toughens the bullet.

Lead 10 parts and tin one part makes an alloy perhaps the best for the majority of bullets. It is tough enough to withstand the quick twist, even at midrange velocities of modern rifles, and is not very expensive. It is easy to mix and cast and is also fine for gas check bullets.

Lead 85 parts, block tin $7\frac{1}{2}$ parts and metallic antimony $7\frac{1}{2}$ parts makes a hard tough alloy with a relatively high melting point that may be used satisfactorily for all bullets—especially for plain base bullets to be driven at muzzle velocities of 1300 to 1500 f. s. from quick twist modern rifles and for all gas check bullets. The antimony enables it to resist the heat of heavier charges of smokeless powders. Bullets cast from this metal are not often marred or dented in handling.

Lead 8 parts, block tin one part and antimony one part is a very hard alloy preferred by some shooters for gas check, heavy plain base and revolver bullets. It is considerably lighter than lead and is somewhat brittle.

When extreme accuracy is desired from cast bullets, some experimenting is usually necessary to learn the exact alloy that best suits a particular barrel. When block tin is not procurable, use half and half solder which is composed of half tin and half pure lead. Tin, in excess of about 11%, contained in a liquid mixture of tin and lead will crystallize when the alloy solidifies. Therefore, no good purpose is served when more than the usual 10 parts of tin generally specified in bullet metals is added.

If metal is to be prepared by the shooter, we advise that pure lead be obtained and that he avoid such materials as lead pipe, linotype metal, battery plates, etc. The usual practice of a shooter is to use up all of the scrap lead available but, if you desire bullets of known hardness, purchase pure materials for making up bullet metals. Materials such as those mentioned above are usually alloyed with antimony, tin, etc., in unknown quantities, which makes difficult the control of the temper of the resulting metal.

Alloying Bullet Metal

Determine first the amount of bullet metal to be made up. Weigh out the required amounts of metals to be used to obtain the desired temper. Melt the lead first and cover it with powdered charcoal and thereafter keep the surface covered. Cut your materials into small pieces as it will be found that the metals will melt faster. After the lead has been melted, drop in the required amount of tin which will melt at once. If an antimony alloy is to be prepared bring the lead and tin mixture to a temperature that will char a piece of wood, but not red hot. Add the antimony in small chunks. It has a higher melting point than lead and may require some time to melt. Antimony does not mix readily with this alloy and the mixture must be stirred frequently. As dross accumulates on the surface avoid skimming it as much as possible but, rather, flux it by dropping in a small piece of grease,

such as bullet lubricant. Keep the temperature down as low as possible, barely melting the antimony, and dross will be minimized. Allow the alloy to cool to a proper casting temperature before beginning bullet casting and do not permit it to stand in melted state long without stirring since the metals have a tendency to separate—the antimony being the lightest tends to rise to the top. Materials for manufacturing bullet metal may be purchased from B. & M. or from nearly all hardware or plumbing shops.

Casting Metals

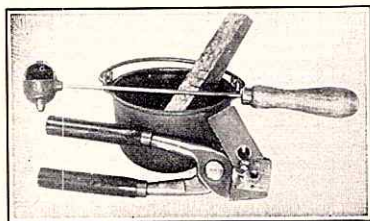
In casting bullets, clean your bullet mould, if of iron, by washing with gasoline or immersing in boiling water for several minutes. Merely wiping out the grease is not sufficient. Much time will be lost and many imperfect bullets will be cast if the mould is cleaned by casting. Next, heat the mould by standing it on a hot griddle, holding it near a gas flame with blocks tightly closed, or, as many prefer by proceeding with the bullet casting. When the latter method is used the imperfect bullets cast while the mould is being heated should be returned to the pot and remelted. If the metal is sufficiently hot five or six bullets should bring the mould to the proper casting temperature. Never immerse the Mould in the bullet metal. The test of correct casting temperature for both alloy and mould is this: pour a bullet leaving a puddle of metal on the cut-off plate—this puddle should require about two seconds to "set" after the dipper nozzle leaves it. Keep the mould and metal at this temperature throughout casting.

Bullet Moulds are heat treated to break them in and they should cast perfect bullets as soon as they are clean and hot enough. When ready to cast, hold the mould with the pouring hole at the side, not on top, and lift a dipper of metal from the bottom of the pot. Spill a little through the nozzle into the melting pot, then press the nozzle into the pouring hole of the mould and, while holding the dipper and mould as one, moving slowly, turn them together to an upright position. The weight of the metal left in the dipper above should assure full, sharp and smooth bullets in the mould below without spilling a drop of metal. Bear in mind that the mould and metal must be hot enough, so that the bullets stay fluid all the time the nozzle is connected and for two seconds afterward.

Use a Rubber Mallet to knock the cut-off plate around, never a metal hammer. Catch the bullets on soft cloth and never allow them to strike each other or any hard surface because they are easily dented or marred when hot. A little practice will enable you to make perfect bullets swiftly.

Should a bullet refuse to fall out of a mould when opened, spread the halves apart and tap with a rubber mallet on the outside of the flat forward end of the plier handle. If metal tends to stick to the cut-off plate or to the nozzle of the dipper, apply a little tallow or beeswax now and then. Never attempt to pry out a sticking bullet and never touch the faces of mould blocks with any metal. The slightest burr on the surface of these blocks will cause trouble. Keep the hinges of the mould lubricated with graphite. When through casting, leave a bullet in the mould blocks, allow to cool, then grease the mould with pure grease. Oil is not sufficient to prevent rust for a period of months at a time.

B. & M. Ladles for Casting Bullets



Ladles for casting Bullets are a necessity if excellent results are to be achieved. B. & M. Ladles are fitted with pipe snouts designed to fit the opening of Bullet Moulds. Ladles prevent spilling the metal. All reloaders who cast their own bullets should own one.

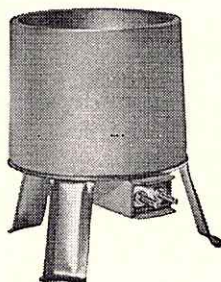
Shipping weight, 8 ounces.

B. & M. Melting Pots

In casting bullets it is necessary to have a body of metal, weighing at least ten pounds, from which to dip. B. & M. Melting Pots are furnished in two sizes. The small size holds from ten to fifteen pounds of bullet metal, sufficiently large for the average individual handloader. The larger size, holding from 25 to 30 lbs., is recommended for use when casting a large number of bullets. B. & M. Melting Pots are cast from iron and are perfectly suited for this use.

Shipping weight, large size, 6 lbs., 8 ozs., small size, 3 lbs., 10 ozs.

ELECTRIC MELTING FURNACES



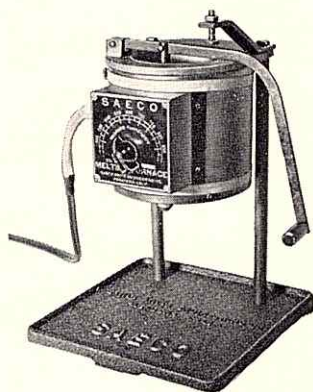
Fisher Furnace

We also supply the Fisher and Saeco makes of electric melting furnaces both of which are excellently adapted for use by the bullet maker.

The Fisher make holds seven pounds of metal and should be kept three-quarters full for best results. When operated on 115 volts, it draws 450 watts, the cost of which is about three cents per hour.

Suited for use with one to six cavity moulds.

The metal must be dipped from this make of furnace by means of a ladle.



Saeco Furnace

The Saeco is a thermostatically controlled furnace which maintains a predetermined even temperature. Its capacity is eleven pounds of metal. It operates on 110-115 volts AC, draws 1000 watts and has a heat range of 450 to 850 degrees F. It is fibreglass insulated. Metal is released directly to the mould through a spout at the bottom.

We carry both of these furnaces in stock. See latest B. & M. price list.

B. & M. Rubber Mallets

A hardwood, lead alloy, plastic or rubber mallet should be a part of every reloader's equipment. They should be used when casting bullets and when seating bullets with the B. & M. Model 26 Bullet Seater, and are useful for other purposes. B. & M. furnish a good hard rubber mallet ideally suited to the needs of the hand-loader.

Shipping weight, 1 pound 10 ounces.

Gas Check Cups

Gas Check Cups are made from copper and are to be used on the bases of cast bullets designed to receive them. They permit the use of heavier charges of powder, thus increasing the velocity, range and killing power of lead bullets. It has been determined that bullets cast from an alloy consisting of one part tin to ten parts lead or any other suitable alloy of this hardness will not strip or skip over the rifling, using any reasonable mid-range load in our modern quick twist rifle barrels.



But mid-range loads of smokeless powder will fuse the unprotected bases of lead bullets. Fusing destroys the accuracy of any load because it deforms the all important bullet base and has also a tendency to extend up the sides of the bullet in streaks allowing gases to rush by. These streaks up the sides of bullets unbalance them and cause them to take what is commonly known as a "corkscrew" flight, ruinous to accuracy. To overcome this difficulty, a shallow cup or gas check is affixed to the bullet base. Energy sufficient to secure excellent accuracy at ranges of 600 yards may then be imparted to the bullet, without danger of fusing or deforming their bases or sides.

While Gas Checks were developed primarily for use in loads for ranges of 500 to 600 yards, they have been found to improve the accuracy of short range loads, due to the fact that the gas check cup provides a base which is smoother and truer than that of the average plain base cast bullet. Loads employing gas check bullets have been used with excellent results on small game and varmints, such as woodchucks and coyotes, and with a great saving in cost over the regular jacketed bullets normally used. For mid-range target shooting with lead bullets they are indispensable.

Gas Checks should be affixed to the bases of bullets before sizing and lubricating. Attaching is a simple operation. The Gas Checks may be spread out, face up, on a table top, the base of the bullet placed in one of the gas checks and pressed into place.

Gas Checks are available in any caliber up to and including 45 caliber. They are manufactured from a specially selected sheet copper of the temper and thickness which shooting authorities have determined as best for each caliber. Shooters will find them uniform in diameter and weight, and desirable in depth and form. The care used in their manufacture results in increased shooting accuracy.

Shipping weight per thousand, 13 ounces.

Sizing and Lubricating Cast Bullets

Sizing

Barrels for firearms are first rough bored, then reamed to a polished or smooth bore and afterward chambered and rifled. The tools used in these operations are subject to wear and, if barrels for firearms are to be produced by machinery at an economical cost, it is not possible to replace these tools at the instant any wear becomes apparent. Thus, manufacturers allow certain tolerances in the groove diameters, bore diameters, and chamber depths and diameters of arms of the same caliber. In the manufacture of ammunition this variation must be taken into consideration and the factory loaded cartridge must fit the smallest chamber and bore likely to occur, with the result that accuracy obtained is not comparable with the highest degree attainable when handloaders assemble ammunition exactly fitted to their arms.

One of the most important factors in obtaining superior accuracy with cast lead bullets is the proper fit of the bullet in the barrel of your arm. The first step in obtaining this proper fit is to ascertain the "groove diameter" of your barrel. The depressions between the raised twist or "lands" of the rifling of a barrel are the grooves. The "groove diameter" is, therefore, the diameter of a barrel measured from the bottoms of opposite grooves. In the old days lead bullets were used slightly smaller than the bore of the arm. This practice enabled shooters to charge easily muzzle loading arms and often permitted the use of a cloth cleaning patch over the bullet. Charges of black powder then used were depended upon to "upset" the bullet sufficiently to make it fit the bore snugly and provide a seal against the escape of powder gases. But today, with some exceptions, lead bullets are sized one to three thousandths of an inch larger than the groove diameter of the arm. On page 110 is a table giving the groove diameters of various caliber arms and the tolerances allowed by the manufacturers. Many handloaders are satisfied to use this table as a guide in determining the diameter of the bullet to be used.

Those who desire to know the exact groove diameter of their particular arm should proceed in the following manner. Remove the bolt or breech block and slightly oil the inside of the barrel. Secure a soft lead slug which is slightly oversize for the barrel and start it from the muzzle using a hardwood punch. When started it can easily be forced entirely through the barrel with the aid of a cleaning rod fitted with a square end tip like the B. & M. Push Tip. When the slug approaches within an inch or two of the breech, arrange to have it drop on some soft material or recover it with your hand to avoid deforming it in any manner. With the aid of a micrometer, the exact groove diameter of the barrel may be obtained by measuring the distance between opposite raised sections of the slug. The bore diameter is the distance between opposite depressed sections of the slug. Barrels having a quick twist may require the slug to be driven through. A hardwood or rubber mallet may be employed. In this operation, as in starting the slug, care should be exercised not to damage the bore.

"Star-gauged" barrels are those in which these measurements have been taken at one inch intervals for the entire length of the barrel. Tight or loose places in your rifle barrel may be noted by the resistance which the lead slug offers in its course through the bore. These variations usually do not materially affect accuracy unless they occur close to the breech or muzzle of the barrel.

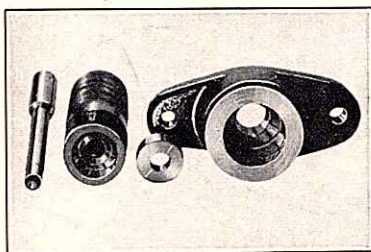
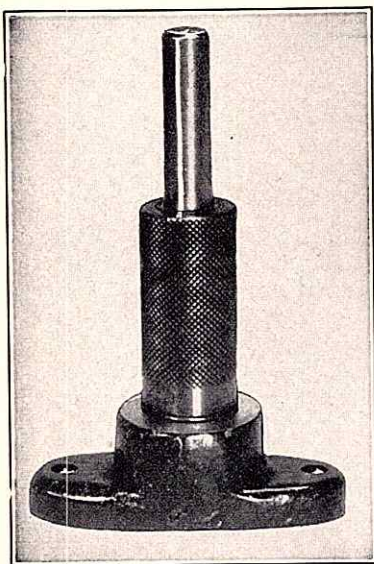
Most bullets as received from the mould are from five to six thousandths of an inch oversize. This oversize tolerance is provided so that the reloader can, by resizing, cut down the diameter of these bullets to meet exactly his requirements. Most authorities agree that bullets resized one, two or three thousandths larger than the groove diameter of an arm are the most satisfactory. The beginner should use slightly oversize bullets.

The B & M Bullet Sizer

Operation

The B. & M. Bullet Sizer is designed to be attached to a work bench having a hole bored underneath to allow the resized bullets to drop through into a padded box or on a blanket. It is an exceptionally accurate straightline tool consisting of four parts—the Base Casting, Guide Sleeve, Driving Plunger and Sizing Die. These are furnished for all standard calibers and resize bullets to the standard diameters stated in the descriptions of each. These standard resized diameters will, in most

cases, be from one to three thousandths larger than the groove diameter of your arm and thus conform to the accepted over-size qualifications for cast bullets. Special sizes for barrels slightly over or under size may be had at a small additional cost. Resizing Dies are made from tool steel and have exceptionally long life. The Guide Sleeve or upper part of the tool is bored the size of the cast bullet. In operation, if gas checks are used they should be attached before the resizing operation is begun. The bullet is started base first in the Guide Sleeve and is forced down and through the die. This operation sizes the bullet exactly.



The B. & M. Bullet Sizer.

Resizing Dies and Guide Sleeves of the B. & M. Bullet Sizers are all interchangeable and, thus, but one base casting is required for any number of calibers. Driving Plungers are concaved to fit the nose of the bullet to be resized, to prevent deforming it in any manner. When ordering, the type of bullet to be used should be mentioned, although plungers shaped for use with pointed or spitzer type bullets can usually be successfully used with blunt nosed bullets.

Shipping weight, 1 pound, 13 ounces.

B. & M. Bullet Sizers may be adapted to any caliber.
Prices of additional parts are as follows:

Plungers.....	.....
Guide Sleeves.....	.....
Sizing Dies.....	.....

For prices see our
regular Price List.

B. & M. Bullet Sizers may be adapted for use to full length resize 45 A. C. P. caliber cartridge cases by the purchase of a Guide Sleeve, Driving Plunger and a specially hardened Die.

30 caliber Bullet Sizers may be adapted for swaging 32-20 caliber jacketed bullets (.312") to the correct size for use in 30 caliber rifles, (.308") by the purchase of a special hardened Die.

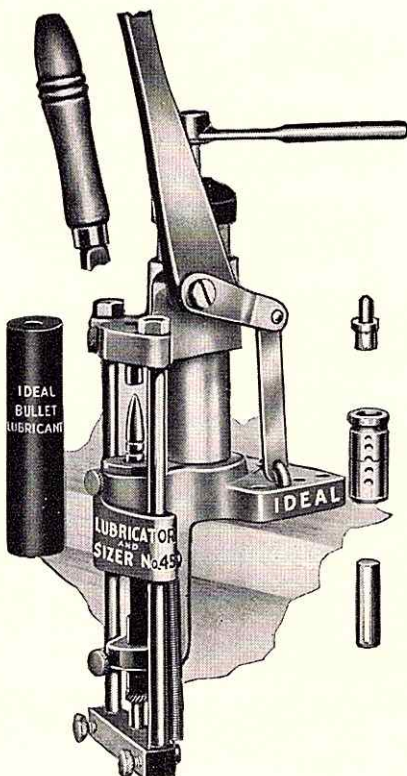
Prices of additional parts for either of these operations are as follows:

Extra Plungers.....	
Extra Guide Sleeves.....	
Extra Dies (hardened).....	

For prices see our
regular Price List.

Ideal Bullet Lubricator and Sizer No. 45

The Ideal Bullet Lubricator and Sizer, No. 45, lubricates and sizes bullets and affixes metal gas check cups (if required) in one operation. It does the work quickly, easily, cleanly and accurately and leaves the bullets perfectly true and clean. It will pay for itself in time saved, if one makes bullets in any quantity. It has been in use for many years and has always given complete satisfaction.



The machine should be ordered with the sizing die of the size which it is desired to size the bullets. Other sizing dies may also be ordered of any size, so that the machine will size any bullet desired. The top punch should be ordered to fit the point of the particular bullet which it is desired to resize, giving the number of the bullet although, usually, if the punch is ordered for a "Spitzer" or sharp pointed bullet, it will work satisfactorily with other types of bullets of that caliber without deforming the point.

Sizing and Lubricating Dies for the Ideal No. 45 Tool are available in the following sizes: .222, .223, .224, .225, .228, .244, .257, .258, .259, .262, .266, .278, .280, .285, .287, .291, .299, .301, .308, .309, .310, .311, .312, .313, .315, .316, .318, .319, .320, .321, .322, .325, .338, .340, .350, .354, .355, .356, .357, .358, .359, .360, .366, .375, .377, .378, .379, .380, .386, .400, .401, .403, .410, .412, .414, .419, .424, .427, .428, .429, .430, .431, .434, .446, .450, .451, .452, .454, .456, .457, .459, .509, .512, .515, (.580 Lub. only.)

Bullet Lubricant may be purchased in hollow sticks easily inserted in chamber by removing handle and unscrewing nut. When it is desired to lubricate gas check bullets in the Ideal Lubricator and Sizer, a special inside punch with the end concaved to fit the gas check should be ordered. This prevents the lubricant from flowing over the slightly convex base of the gas check and crowding itself between the base of the bullet and punch.

We recommend this machine to those handloaders who contemplate resizing and lubricating a large number of cast bullets.

We regularly carry the tool in stock as well as additional dies for adapting it for additional calibers. Complete operating instructions accompany each set.

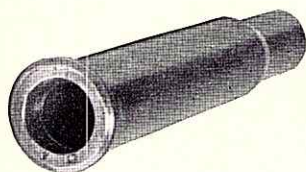
Shipping weight, 4 pounds.

If you use the 310 Tool for this operation you will need a Bullet Sizing Chamber of the diameter selected. These are available for the following diameters: .224, .225, .226, .228, .244, .257, .258, .266, .278, .280, .285, .287, .299, .301, .308, .309, .311, .312, .313, .315, .319, .320, .321, .322, .323, .338, .350, .356, .357, .358, .359, .360, .366, .386, .400, .401, .403, .410, .412, .424, .427, .428, .429, .430, .431, .448, .450, .451, .452, .454, .456, .457, .508, .512, .515.

Lubrication of Bullets

MATERIALS REQUIRED

1 Cake Cutter 1 Pan Bullet Lubricant



Cake Cutter.

For lubricating bullets, no way has been designed as good as melting the lubricant and dipping the bullet base into it. Stand the resized bullets on their bases in a pan provided for the purpose and pour the melted lubricant into the pan until it reaches the uppermost groove in the bullet. After the bullet lubricant has hardened, a Cake Cutter is used to remove the bullets by passing the Cake Cutter over them. These Tools are furnished in bullet diameter. The mouth is forced over the bullet, shaving the lubricant clean along its sides, which operation results in a perfectly lubricated bullet. The Cake Cutter is open at the top permitting the bullets to be expelled as the operation is continued. Bullet Lubricant should be wiped from the bases of bullets before loading.

Cake Cutter shipping weight, 8 ounces.

Table of Jacketed Bullets, Primers and New Empty Primed Cartridge Cases.

Jacketed Bullets, Primers and New Empty Cartridge Cases

When available, we carry a complete stock of jacketed bullets, primers and new empty cartridge cases. These ammunition components are of Remington, Winchester, Western and Peters manufacture. We try at all times to have all brands on our shelves for prompt shipment, but in the event that we are sold out of any item, delay in shipping will only be until the arrival of our new factory shipment. Often a delay of this nature will be avoided if the shooter will state a choice of brands with which the order may be filled. AT THE PRESENT TIME (October 1958) ALL OF THE BULLETS AND EMPTY CARTRIDGE CASES SHOWN ARE AVAILABLE. See our latest Price List for information on available handloading supplies. Primers and primed cases cannot be mailed but may be shipped either by Express or Freight. Bullets and unprimed cartridge cases may be forwarded via parcel post. Order primers by brand and number, stating whether for rifle or revolver cartridges and avoid all possibility of error. Abbreviations used to indicate the style of bullets listed below are as follows: OP—Open Point, Hollow Point or Mushroom; SP—Soft Point; FJ—Full Metal Jacket; Bt—Boat-tail; MP—Metal Patched; BP—Bronze Point (Rem.); CL-OP—Corelokt Open Point (Rem.); CL-SP—Corelokt Soft Point (Rem.); ST—Silver Tip (Western and Win.); PtSP—Pointed Soft Point; PE—Pointed Expanding (Win.). See price list enclosed for latest prices.

NAME AND CALIBER	PRIMER			BULLET	
	Win.	Rem.	West.	Style of	Weight Grs.
218 Bee.....	116	6½	6½	OP	46
219 Zipper.....	120	9½	120	OP	56
22 Hornet.....	116	6½	6½	OP, SP	45
				OP	46
220 Swift.....	120	9½	8½	SP, Pt. SP	48
222 Remington.....	116	6½	6½	SP, FJ	50
222 Remington Magnum...	116	6½	6½	SP	55
244 Remington.....	...	9½	...	Pt.SP	75
				Pt.SP	90
243 Winchester.....	120	9½	8½	SP, Pt. SP	80
				SP, Pt. SP	100
25 Automatic (6.35 m/m)...	108	1½	1½	FJ	50
25-20 Winchester.....	116	6½	6½	Lead	86
				SP	86
				OP	60
25-35 Winchester.....	120	9½	8½	SP, CL-SP	117
250 Savage.....	120	9½	8½	Pt.SP-CL, CL-SP,	100
				ST	100
				SP, Pt. SP	87
257 Roberts.....	120	9½	8½	SP, CL-SP	117
				Pt.CL-SP, ST	100
				SP	87
270 Winchester.....	120	9½	8½	SP, CL-SP	150
				BP, Pt.CL-SP, ST	130
				Pt.SP, SP	100
7 m/m Mauser.....	120	9½	8½	SP	175
280 Remington.....	120	9½	8½	Pt. SP-CL	125
				Pt. SP-CL	150
				SP-CL	165
30 Mauser (7.63 m/m)....	108	1½	1½	MP	86
30 Luger (7.65 m/m).....	108	1½	1½	MP	93

JACKETED BULLETS, PRIMERS AND NEW EMPTY CARTRIDGE CASES—Continued

NAME AND CALIBER	PRIMER			BULLET	
	Win.	Rem.	West.	Style of	Weight Grs.
30-30 Winchester.....	120	9½	8½	FJ, SP, CL-OP	170
				CL-SP, ST	170
				OP, CL-SP, ST	150
30 Remington.....	120	9½	8½	ST, CL-SP	170
308 Winchester.....	120	9½	8½	Pt. SP-CL, SP	110
				Pt.SP-CL, ST, SP	150
				Pt.SP-CL, ST, SP	180
				ST	220
30-06 Springfield.....	120	9½	8½	SP, CL-OP,	220
				CL-SP, ST	220
				SP, Pt.SP-CL, ST	180
				CL-SP, BP	180
				Pt.SP-CL, SP	150
				BP, FJ, ST	150
				SP, Pt.SP-CL	110
30-40 Krag.....	120	9½	8½	CL-SP, ST	220
				Pt.SP-CL, SP, ST,	180
				CL-SP	180
300 H & H Magnum.....	120	9½	8½	CL-OP, ST	220
				Pt.SP-CL, ST	180
				ST	150
300 Savage.....	120	9½	8½	Pt.SP-CL, CL-SP,	180
				ST	180
				CL-SP, BP, ST	150
				PtSP-CL	150
303 Savage.....	120	9½	8½	CL-SP, ST	190
303 British.....	120	9½	120	SP	215
32 Winchester Special.....	120	9½	8½	SP	170
				CL-SP, CL-OP	170
				ST	170
32 Automatic (7.65 m/m)..<	108	1½	1½	MC	71
32 S & W.....	108	1½	1½	Lead	85
				Lead	88
32 S & W Long.....	108	1½	1½	Lead	98
				WC	98
32 Short Colt.....	108	1½	1½	Lead	80
32 Long Colt.....	108	1½	1½	Lead	82
32 Colt New Police.....	108	1½	1½	Lead	98
				Lead	100
32 Remington.....	120	9½	8½	CL-SP	170
				ST	170
32-20 Win. Revolver.....	108	1½	6½	Lead, SP	100
				OP	80
32-20 Winchester Rifle....	116	6½	6½	Lead, SP	100
				OP	80
32-40 Winchester.....	120	9½	8½	SP	165
8 m/m Lebel.....	120	9½	8½	SP	170
8 m/m (7.9 m/m) Mauser..	120	9½	120	SP	170
348 Winchester.....	120	9½	8½	CL-SP, ST	200
				ST, SP	150
				ST	250

JACKETED BULLETS, PRIMERS AND NEW EMPTY CARTRIDGE CASES—Continued

NAME AND CALIBER	PRIMER			BULLET	
	Win.	Rem.	West.	Style of	Weight Grs.
35 Remington.....	120	9½	8½	OP, SP, ST CL-OP, CL-SP Pt.SP-CL	200 200 150
351 Win. Self-Loading.....	116	6½	6½	FJ, SP	180
357 Magnum.....	108	1½	1½	Lead	158
358 Winchester.....	120	...	8½	ST	200
				ST	250
375 H & H Magnum.....	120	9½	8½	FJ, ST	300
				SP	270
9 m/m Luger.....	108	1½	108	FJ	115
				FJ	124
38 Smith & Wesson.....	108	1½	1½	Lead	146
38 Special.....	108	1½	1½	WC	148
				Lead	158
				MP	158
				Lead	200
38 Short Colt.....	108	1½	1½	Lead	130
				Lead	125
38 Long Colt.....	108	1½	1½	Lead	150
38 Colt New Police.....	108	1½	108	Lead	150
38 Automatic.....	108	1½	1½	FJ	130
380 Automatic.....	108	1½	1½	FJ	95
38-40 Winchester.....	111	2½	7	SP	180
38-55 Winchester.....	120	9½	8½	SP	255
41 Long Colt.....	108	1½	1½	Lead	200
				Lead	195
44 S & W Special.....	111	2½	111	Lead	246
44 Magnum.....	111	2½	7	Lead	240
44-40 Winchester.....	111	2½	7	SP	200
45 Colt.....	111	2½	7	Lead	255
				Lead	250
45 ACP* & Auto Rim.....	111	2½	7	MC	230
				Lead	230
45-70 Government.....	120	9½	8½	SP	405

*Frankford Arsenal Cases take an F. A. Primer, caliber .45.

In addition to the above mentioned primers, there are also available to the hand-loader the following: Federal Cartridge Corp No. 210, large rifle; No. 200, small rifle; No. 150, large pistol and No. 100, small pistol. Peters Cartridge Co., also supply primers. These are their Nos. 12, 65, 20X and 15, which are their large rifle, small rifle, large pistol and small pistol sizes respectively. We also stock the complete line manufactured by the Cascade Cartridge Co. These are the No. 200, large rifle; No. 400, small rifle; No. 300, large pistol and No. 500, small pistol.

There are many other makes of bullets available to hand loaders such as those furnished by Sierra, Jordan, Hornady, Speer and others, the more popular of which are listed and priced in the B. & M. Price List. Both bullets and empty unprimed cartridge cases are available in Norma make. These products have become most popular with handloaders because their quality is unexcelled and have the additional advantage in that they generally are lower priced than the standard "factory brands."

*"Make This Nation Again
A Nation of Riflemen"*



Join The
National Rifle Association
1600 Rhode Island Ave.
WASHINGTON, D. C.



Bench Rest Shooters
Association
85 Eastern Ave.,
ST. JOHNSBURY, VT.



The United States
Revolver Association
5 Oak Street
SPRINGFIELD, MASS.

Reloading Shotgun Shells

Due to the high cost of shotgun ammunition, the practice of handloading shotgun shells is becoming ever more popular. While definite figures are difficult to quote, if the handloader has a source of "empties" obtainable at no cost to him he can effect a saving of 50% or more by handloading this kind of ammunition. He can also often obtain cartridges which differ ballistically from those currently offered by the manufacturers and of course, he can use any size shot in any of his ammunition at will.

A paper shotgun case consists of a tube, the base wad and a brass base. The tube is manufactured by passing waterproofed paper in sufficient quantity over a steel mandril of a proper size for the gage desired after which these tubes are cut into lengths correct for the length of case wanted. The tubes are then inserted into a brass base and a rolled paper base wad is forced under great pressure into the tube to the bottom of the case being manufactured. Cannelures are then rolled into the side of the brass base to hold the assembly together. There are "high brass" and "low brass" empties depending on the length of the brass base, but this feature has no real meaning to the handloader. However the height of the base wad used by the manufacturer does have a meaning for this feature largely determines the capacity of the case. Therefore the handloader should separate his empties into (1) gage, (2) make and brand, (3) overall length and (4) according to the height of the base wad. If your loading set incorporates a separate ram for seating wads, use this to determine the height of the base wad. If it does not, form one from wood, marking on it graduations which enable you to separate the cases into lots, each of which have about the same inside dimensions. This is necessary because charges of some powders occupy more space than others. Generally, bulk powders are used in low base cases and dense powders in the high base type.

Skeet and trap shooting clubs are the common source of empty shells. Since shotgun cases, like rifle and revolver cases, expand on firing, if your supply has not been fired in your own gun, they usually need to be resized. Most shot shell loading sets incorporate some means of accomplishing this work. If they do not, a separate Full Length Shell Resizer must be purchased. Try all empty fired cases in the arm in which the loads will be used and resize all which do not chamber freely. Sometimes empties will not interchange in a double barrel gun.

The next step is de- and re-capping. This is accomplished in many ways by the various reloading sets. Most primers in use today are the "battery cup" style. These consist of the primer housed in a supporting cup. Both the fired primer and the cup are removed and replaced by another assembly of the correct size. Information on the correct size of primers to use is generally found in the distributors current price list. At present (1959) the Winchester and Western No. 209 primer is used in all gages of Winchester and Western brands of shot shells. This primer also fits Federal cases and a large percentage of the private or mail order house brands. The Federal make is also available and is also numbered 209. Remington uses the No. 57 in shot shells of Remington and Peters brands in 10 to 20 gages. A No. 69 fits the smaller gages. Primers must be seated flush with the brass base of the empties. If not, the fall of the firing pin on the primer may be cushioned causing a possible misfire. There is also some danger of such cartridges being prematurely fired when used in some of the semi-automatic guns.

The next operation is powder charging. Black powder was the first kind of propellant used in shot shells. There is still some demand for shot shells so loaded since they are the only kind which can be safely used in some of the older models of shotguns fitted with damascus type barrels. When using black powder a dip or scoop type of measure is employed. These are adjustable and are graduated to drams ($27\frac{1}{32}$ grs.).

The shot charge is also often measured with them. The handloader simply decides what charge he wants, sets the measure accordingly and proceeds to load by dipping the charge and funneling it into the case. A low base case must be used

with black powder because the charge occupies a comparatively large space. The granulation FFFg is generally used in shot shells. Loading pressure is unimportant when this propellant is used.

Smokeless powder has now almost completely taken the place of black powder in all sporting ammunition. The first kinds of smokeless powders used in shot shells were termed "Bulk Powders." They were so designated because the charge occupied the same amount of space as the black powder which it replaced. Thus, the black powder measure was continued in use. The smokeless powder did not weigh as much as the black but the same volume produces similar ballistics in the loaded cartridge. These were the original "drams equivalent" cartridges. The system is still employed. Regardless of what kind of powder a given cartridge contains, the charge is designated as "drams equivalent" i.e. such a cartridge marked $3\frac{1}{4}$ - $1\frac{1}{8}$ means it will duplicate the ballistics of a similar cartridge loaded with $3\frac{1}{4}$ drams of black powder and $1\frac{1}{8}$ oz. shot. There remains now only one type of bulk smokeless powder and this is DuPont Bulk Smokeless Shotgun and, even this propellant cannot now be safely loaded "bulk for bulk" due to the fact that modern primers are more brisant (more efficient so to speak) than they were some years past. If a black powder type measure is used with DuPont Bulk Shotgun powder, reduce the charge about 20%. This propellant is widely used for making up all but the high velocity type of cartridge. Use a black powder dip measure and adjust to the drams equivalent load wanted. Low base cases must be used. Wad pressure is from 30 to 50 pounds.

All of the other types of powders now used in shot shells are designated as "dense". The Hercules Powder Company supply two kinds—Red Dot and Herco. Red Dot is a progressive burning dense powder which still occupies a considerable amount of space in the cartridge. Low base cases are generally used but some of the high base type may also be utilized. Wad seating pressure is 50 pounds. Hercules Herco is a coarse grained powder recommended for use in making up high velocity loads only. It will not burn well if loaded much lower than the amount required for maximum loads. Because of its bulk, low base cases are used. Wad seating pressure is 80 pounds. Hercules Unique is also used to some extent in shot shells. Recommended wad seating pressure is 50 pounds. DuPont supplies a dense smokeless powder designated as "PB". It is a single base type recommended for use in medium velocity cartridges. It is used in high base cases. Wad seating pressure is 70 to 80 pounds. It replaced MX, a similar powder, used by hand loaders for many years.

The DuPont Company does not offer the handloader a propellant for making up high velocity shotgun shells.

The Alcan Company also supplies a full line of shotgun powders. AL-5, AL-7 and AL-8 are recommended for high velocity, Magnum and Super Magnum loads respectively. Wad Seating pressure is 90 pounds. AL-101 and Super M Ballistite are suited for use with trap and skeet loads. Wad Seating pressure recommended for AL-101 is 60 and for Super M, 25 pounds respectively.

Table of Shotgun Loads

The following table of shotgun loads is prepared from sources which we believe reliable. However, due to the fact that we have no control over the condition of the arms in which they may be used, the methods of loading, selection of cartridge components and other variables, Belding & Mull assumes no responsibility for their use. **Do not use a dip or scoop (Black or Bulk Smokeless) type measure when "dense" (Red Dot, Herco, PB, Alcan, etc.) powders are used.** As much as quadruplicate charges can be the result of this error.

10 GAUGE

Shot Weight Ounces	Powder Kind	Charge Grains	Seating Pressure	Drams Equivalent Velocity
1¼	Super M	21.0	25	3¾
1¼	Red Dot	27.0	80	3¾
1¼	AL-5	40.0	90	4¼
1¼	AL-5	41.0	90	4½
1⅝	Herco	45.0	80	4¾
1⅝	Red Dot	32.0	80	4¾
1⅝	AL-5	44.0	90	4¾
2	Herco	46.0	80	5

12 GAUGE

Shot Weight Ounces	Powder Kind	Charge Grains	Seating Pressure	Drams Equivalent Velocity
1⅞	Super M	16.5	25	2¾
1⅞	Unique	23.0	50	2¾
1⅞	AL-101	19.0	60	2¾
1⅞	AL-101	20.0	60	3
1	AL-101	19.0	60	3
1	Super M	17.5	25	3
1⅞	Super M	18.5	25	3
1⅞	PB	27.0	60	3
1⅞	Red Dot	23.0	80	3
1¼	PB	29.0	60	3
1⅞	PB	28.0	60	3¼
1¼	AL-5	30.0	90	3¼
1¼	AL-5	32.0	90	3½
1¼	Unique	25.0	50	3¾
1¼	Herco	33.0	80	3¾
1¼	AL-5	34.0	90	3¾
1¼	AL-5	36.0	90	4
1⅝	Unique	28.0	50	4
1⅝	Herco	38.0	80	4
1⅝	AL-7	37.0	90	4
1⅝	AL-7	38.0	90	4½

16 GAUGE

Shot Weight Ounces	Powder Kind	Charge Grains	Seating Pressure	Drams Equivalent Velocity
⅞	AL-101	17.0	60	2½
⅞	Super M	15.0	25	2½
1	PB	22.0	60	2½
1	AL-5	24.0	90	2½
1	Red Dot	18.0	80	2¾
1	AL-5	26.0	90	2¾
1⅞	AL-7	26.0	90	2¾
1⅞	AL-7	27.0	90	3
1⅞	Unique	18.0	50	3¼
1⅞	Herco	28.0	80	3¼
1⅞	AL-7	28.0	90	3¼

20 GAUGE

Shot Weight Ounces	Powder Kind	Charge Grains	Seating Pressure	Drams Equivalent Velocity
$\frac{3}{4}$	AL-101	14.0	60	$2\frac{1}{8}$
$\frac{3}{4}$	Super M	12.0	25	$2\frac{1}{8}$
$\frac{7}{8}$	PB	19.0	60	$2\frac{1}{8}$
$\frac{7}{8}$	Red Dot	16.0	80	$2\frac{1}{8}$
$\frac{7}{8}$	AL-5	22.0	90	$2\frac{1}{8}$
$\frac{7}{8}$	AL-5	24.0	90	$2\frac{1}{4}$
1	Unique	16.0	50	$2\frac{1}{2}$
1	Herco	23.0	80	$2\frac{1}{2}$
1	AL-7	24.0	90	$2\frac{1}{2}$
1	AL-7	25.0	90	$2\frac{7}{8}$
$1\frac{1}{8}$	AL-8	32.0	90	3

410 GAUGE

Shot Weight Ounces	Powder Kind	Charge Grains	Seating Pressure	Drams Equivalent Velocity
$\frac{1}{2}$	Use 15.0 Grains HERCULES 2400 Maximum			
$\frac{5}{8}$	Use 15.5 Grains HERCULES 2400 Maximum			
$\frac{3}{4}$	Use 16.0 Grains HERCULES 2400 Maximum			

The next operation is placing wads over the powder charge and applying the proper pressure thereon. The amount and kinds of wads necessary in a given cartridge is generally determined by experimenting. The minimum requirements in wadding will consist of an over-powder "A" wad, usually .135" thick, followed by at least one $\frac{1}{4}$ " filler wad. The "A" or over powder wad is made of hard cardboard. It acts as a firm basis for the application of pressure to the powder charge and prevents leakage of lubricant, used on filler wads, from reaching the powder charge. Filler wads are made from resilient material to act as a cushion to the shot charge and expand to fill the case and barrel when the cartridge is fired thus preventing the leakage of gas into the shot column. Generally the Western Expert or Winchester Ranger 12 ga. shells loaded with 23.0 grains of Hercules Red Dot Powder and $1\frac{1}{8}$ ounce shot will require one "A" or .135" over powder wad and one $\frac{1}{2}$ " or two $\frac{1}{4}$ " filler wads. The Remington 12 ga. Shur Shot shell similarly loaded will require one "A" or .135" over powder wad and two $\frac{3}{8}$ " filler wads. This wad column meets wadding requirements for excellent ballistic performance and generally leaves the 0.6" case lip necessary to form the popular folded crimp now commonly employed. If the round crimp is used, about 0.4" is required. An over-shot or "B" Wad is needed when the round crimp is employed. Both over powder and filler wads are available in several thicknesses. The hand loader is well advised to have some of all kinds at hand to meet all of these requirements. After the proper wad column has been inserted, pressure must be applied, depending on the kind of powder being used. This is a very necessary loading operation. The amount of pressure to be applied for a particular propellant was given earlier in the discussion of the various types of shot gun powders. Some shot shell reloading tools are so designed that pressure is applied to the wad column automatically. If the reloading set does not so provide, other means for determining the correct pressure will need be devised. One of the common methods is to place the loader, as for instance, the Ideal Straightline Handloader, atop a bathroom scale and apply force to the rammer until the correct pressure is reached.

The shot charge is now placed in the shot shell tube. The amount of shot was probably decided upon when the powder charge was determined. Generally the size of the shot used has little or no effect on the pressure developed by the powder charge. However shot charges are generally determined by measure. A given volume of small diameter shot will weigh more than the same volume of the larger sizes. For a given powder charge, pressure will increase as the weight of the shot charge is increased. If the cartridge being loaded develops maximum pressure, the shot charge should be determined by weight.

The final operation is crimping. Uniformity of crimp is more important than wad seating pressure. Shells that have been reloaded several times should be trimmed enough to fold the crimp in a new section of the paper tube. When using a slow burning powder, such as Hercules Herco, it is essential to maintain a firm crimp in order to allow proper ignition of the powder. Complete instructions for crimping accompany each set of reloading tools or dies and, if the above conditions are met, the hand loader should encounter no difficulty here. The crimp holds the shot shell together. Unless new cases are employed, it will never be as firm as that found in the factory cartridge. Users of handloaded shotgun ammunition should not subject such loads to the abuse often accorded the factory product.

Wadding should be chosen by trial to leave the proper space above the shot for correct crimp turnover as shown in this table.

Gauge	TYPE OF CRIMP		Gauge	TYPE OF CRIMP	
	Folded	Rolled		Folded	Rolled
10	0.6"	0.5"	20	0.35"	0.25"
12	0.5"	0.4"	.410	0.25"	0.15"
16	0.4"	0.3"			

Reloading Brass Shotgun Shells

Brass shot shell cases are loaded in about the same manner as the paper ones. Because the walls are much thinner a larger wad is required. These are available made especially for use with brass shells. Brass shells are rarely crimped. Instead, a "B" or over shot wad is used and sealed in place by the use of Sodium Silicate (water glass) or Duco cement available at a nominal cost at any drug store.

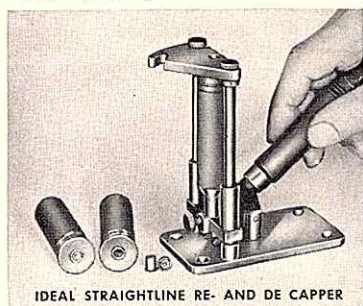
Brass shotgun shells are quite expensive and are often difficult to procure. Some require the use of a Berdan type primer, often not readily found.

They are, however, easier to load. They last a long time and, because they require no crimp, any suitable combination of wads may be inserted which the handloader has at hand.

Brass bases are generally shorter than the paper variety but they have the capacity for full power loads. The thinner walls and lack of a base wad accounts for this feature.

We manufacture no shot shell reloading tools. We do stock and supply the Lyman Ideal Shot Shell Reloading Tool, their Dies which are adapted for use with their EZY-Loader, Comet and All-American Presses as well as the Acme and C-H Tools. Complete instructions for their use accompany each set.

New, Improved LYMAN *Ideal* Shotshell Reloading Tools



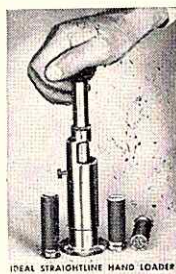
IDEAL STRAIGHTLINE RE- AND DE CAPPER

Ideal Straightline Re and De-Capper

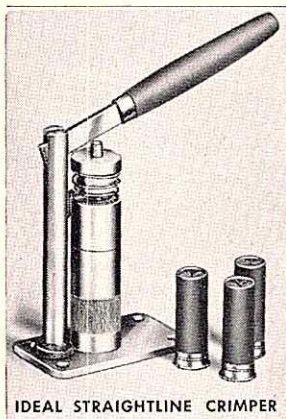
Seat primers to uniform depth no matter what length, or size of shotshell. Especially designed to re and de-cap all shells for 12 to 20 gauge.

Straightline Hand Loader

A compact convenient and highly satisfactory tool for loading shotshells made in 12, 16 and 20 gauges. Used on a table or bench and may be fastened down if desired. Suitable for use with either new or fired paper shells.



IDEAL STRAIGHTLINE HAND LOADER



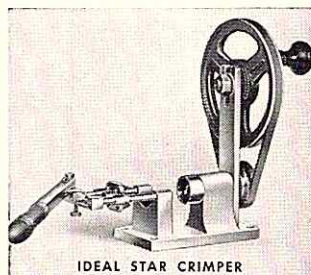
IDEAL STRAIGHTLINE CRIMPER

Ideal Straightline Crimper

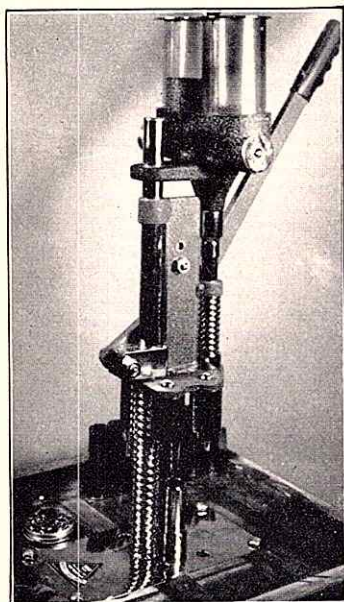
The Straightline Crimper is operated by hand. Return the original crimp on the "New Crimp" shells with a simple "straight" pressure of the arm. Gives firm and accurate crimp. Available for 12, 16 and 20 gauges.

Ideal Star Crimper

Operates by hand or by power but is not recommended for continuous power drive. Works in a straight line and turns a perfect round crimp. Furnished with solid steel crimping heads. Available in 10, 12, 16, 20 and 410 gauges. One grip will handle all size shells.



IDEAL STAR CRIMPER



Acme Model 200 C Loader.

common powder, generally Hercules Red Dot. The Model 200 D seems to be the same as the Model 200 DC except that it does not include attachments to de and recap battery cup primers.

The Model 59 lacks the 250 shell capacity powder and shot hoppers and the Model 39 is less a powder and shot measure.

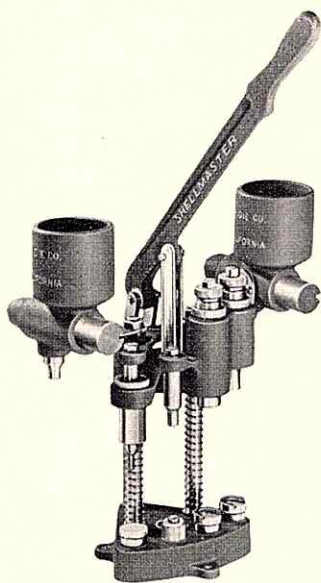
All of these models operate on the same principle. Complete operating instructions accompany each set. They are available in 12, 16, 20 and 410 gauges. See latest copy of the B & M Price List for prices applicable.

The Acme line of Shot Shell Loaders is now made up of five models.

The Model 400 is the latest and most expensive. This Tool decaps and reprimers, handling both the complete battery cup style of primers or, if desired, it removes and replaces the cap or primer only of this assembly utilizing attachments which are standard equipment with this model. It is fitted with an adjustable powder and shot measure on which changes to any practical load can be made in fifteen seconds. The metal hoppers have a 250 shell capacity, and are attached in a manner which permits the operator to see when they need refilling. A wad pressure and crimp pressure gauge are provided as well as a shell tester and former. The manufacturer claims 150 cartridges per hour are easily loaded with this model tool.

The Model 200 DC differs from the Model 400 in that it does not include the quick load change feature. The powder and shot charges are measured on this tool by means of a loading bar. There are about 25 of these bars available, each made to throw a given charge of powder and shot. There is also available a Universal measuring bar which is adjustable. Unless otherwise specified, they are furnished standard with a loading bar set for some medium load of a

C-H SHELL MASTER



C-H Shell Master

This is the shot shell loader recently placed on the market by the C-H Die Co. The manufacturer claims shotshells can be loaded at a rate of one each 20 seconds without making any die adjustments or changes.

The wad column is seated accurately in one operation in a wad guide. Primers are seated by internal pressure and each operation is completed on a positive stop. It is fitted with a calibrated pressure gauge which is adjustable from zero to 120 pounds. A star crimp is accomplished in one operation. This tool is furnished complete with powder and shot measure. The finish is a red wrinkle and all steel parts are plated for good appearance and corrosion resistance.

Complete operating instructions accompany each set. For prices, see the B. & M. Price List.

B. & M. Stainless Steel Cleaning Rods

Advantage of Stainless Steel for Cleaning Rods

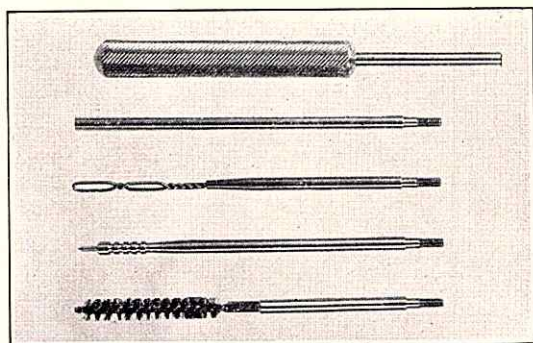
Stainless Steel will not rust or corrode.

Stainless Steel used in B. & M. Rods and Tips has a hard, highly polished, close-grained surface which will not carry and hold abrasive dirt and grit.

Stainless Steel will withstand the chemical action of all proper cleaning solutions, including ammonia preparations.

Stainless Steel Rods are stiff, straight, and strong. If bent they will spring back to their original position.

Stainless Steel Rods will withstand use and abuse which would ruin rods made of other materials.



B. & M. Cleaning Rod Type "A" Showing all available Tips.

Mechanical Features of B. & M. Rods

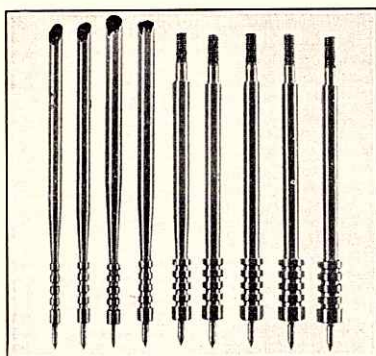
THE HANDLES—All Handles are made of steel, knurled, and are indestructible. They are $5\frac{1}{2}$ inches long and of two diameters. The large diameter, $\frac{5}{8}$ inch, is standard and used on all rods except the Type "C", the handles of which are $\frac{3}{8}$ inch in diameter.

THE SWIVEL—An exceptionally easy running smooth swivel is incorporated in the large B. & M. Handle. All side strain is relieved by a $2\frac{1}{2}$ inch section of the Rod within the Handle forming a bearing below the swivel. The end thrust is carried by a cone bearing and the counter end thrust by a substantial pin. This design provides exceptional strength and reliability. B. & M. Swivel Handles allow the patch to follow the twist of the rifling. You can see the Rod turning and are assured that the patch is running truly with the grooves and cleaning them properly.

THE JOINTS—A double dowel design is used. The connecting threads carry only the thrust. The side strain is carried on long, neat fitting dowel shoulders. This construction provides exceptional firmness and strength. B. & M. sectioned joints are remarkably true and have no tendency to become loose and wobble. Any wear is taken up automatically. The joints stay well locked in use, yet are easily unscrewed. All sections of a rod and the tips screw together properly and hence are interchangeable.

B. & M. Tips

B. & M. Tips must be used before a shooter can really appreciate their excellence. They consist of a Mull Tip, Double Slotted Tip, Push Tip and Brass Brush and Adaptor. B. & M. Stainless Steel Rods are furnished standard with a Mull Tip and Brass Brush and Adaptor. The Double Slotted Tip may be had in place of the Mull Tip if so desired. Push Tips are extra.



Mull Tips may be had in all Calibers. 1. 22-caliber. 2. 25-caliber.
3. 270-caliber. 4. 30-caliber. 5. 35-caliber. 6. 38-caliber.
7. 40-caliber. 8. 44-caliber. 9. 45-caliber.

THE MULL CENTERING TIP is acclaimed by shooters as the finest on the market. Its design is clearly portrayed in the above picture. The pin on the end of the tip is passed through the center of the patch and holds the patch on the tip as the rod is passed through the action and accurately centers the patch in the bore of the rifle. The diameters of the forward knob and the succeeding bands are such that a standard patch is held against the lands with just enough pressure to insure proper cleaning. The bands on the Mull Tips hold the patch securely on the tip during the forward and rearward stroke and press it in five continuous circles against the bore. The loosened fouling is collected by those sections of the patch which lie between the bands. The Mull Tip insures easier, better, and safer cleaning. Unless otherwise advised, the Mull Tip is furnished as standard equipment with all B. & M. Cleaning Rods.

B. & M. DOUBLE SLOTTED TIPS are made of strong, smooth surfaced, steel wire. Shooters who prefer slotted tips for cleaning will find this tip superior to the ordinary single slotted type. The two slots of the B. & M. tip are at right angles with each other. When a patch is inserted in each slot or a longer thinner patch threaded through both slots the tip is held safely away from the bore and thorough cleaning is insured. The Slotted Tip is also especially useful when the bore is to be coated with heavy oil or grease. It can be had in place of the Mull Tip or ordered as an extra.

THE BLANK PUSH TIP is used to force lead slugs through the bore, to assist in removing cartridge cases which do not extract easily, or to remove any obstruction in the chamber or bore of the firearm. Available as extra equipment.

BRASS and BRISTLE BRUSHES have long been recognized as a necessary part of any cleaning outfit. They are usefully employed in the removal of tight fouling, metal fouling, etc., when ordinary cleaning methods fail.

A Brass Brush and Adaptor is furnished as standard equipment with all B. & M. Cleaning Rods.

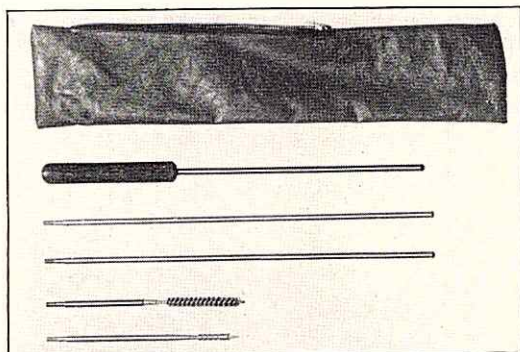
B. & M. Cleaning Rods

B. & M. Stainless Steel Rods are manufactured in two diameters—.203 inch for 25 and smaller caliber arms and .250 inch diameter for larger caliber arms. The standard length is 36 inches but they can be had in other lengths by purchasing extra 6 inch or 12 inch sections as desired. These Rods are manufactured in four types designed to meet all needs of the shooter. They are furnished in all calibers. When ordering, please state caliber desired. All Rods are complete with a set of Tips, consisting of the following; Mull Tip, Brass Brush and Brass Brush Adaptor. The Double Slotted and Push Tips can be purchased as extras.

Type "A" Cleaning Rod

This is a one-piece Rod, 36 inches in length, designed primarily for home use. Every shooter should own a one-piece Cleaning Rod. Complete with set of Tips as described above.

Shipping weight, 1 lb. 14 ounces.



B. & M. Cleaning Rod. Type "B"

Type "B" Cleaning Rod

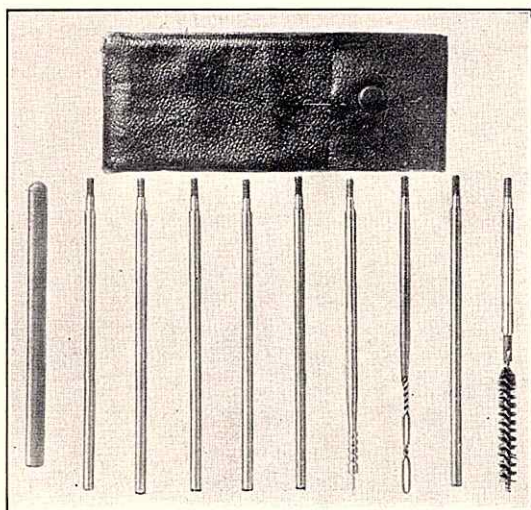
This type is a three-piece jointed Rod consisting of two 12 inch and one 6 inch sections. Complete with set of Tips as described above, all in a convenient leatherette carrying case.

Shipping weight, 1 pound.

Type "C" Cleaning Rod

This type "C" Cleaning Rod consists of six 6 inch sections and a small rigid $\frac{5}{8}$ inch handle which is threaded to the Rod when assembled. It is designed for lightness and portability and can easily be carried in the pocket. Complete with set of Tips as described above, in a convenient leatherette case. This is the Field Kit mentioned by Col. Towsend Whelen in the '57 issue of "Gun Digest."

Shipping weight, 1 pound



B. & M. Cleaning Rod Type "C" Showing all available Tips.

Revolver and Pistol Rods

The Pistol or Revolver Rod consists of a small Type C Handle, 6 inch Section and a set of Tips as furnished with other B. & M. rods, all in a convenient zipper leatherette case.

Shipping weight, 1 pound.

B. & M. Stainless Steel Cleaning Rods may be adapted to larger calibers than the one for which they were originally purchased by obtaining an Adaptor and extra Tips of the proper caliber.

For prices, see our regular Price List.

Shipping Weight of each of the above Tips, 8 ounces.

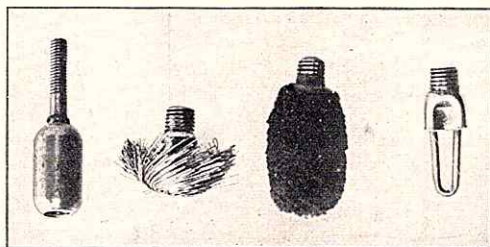
Stop Collar



B. & M.
Stop Collar.

THE B. & M. STOP COLLAR is designed to be attached to a Cleaning Rod to limit the forward cleaning stroke, so that the patch will not emerge from the bore of the arm and drop off or, due to only a slight protrusion, become wedged in the bore causing delay and loss of patience. It is manufactured from steel and is indestructible. An easy twist of the thumb and finger anchors the collar securely to the Rod at any desired point without marring its highly polished surface. Its use makes cleaning speedier, safer, and more satisfactory. B. & M. Stop Collars are made to fit standard Cleaning Rods of our own and other makers. When ordering, state the diameter of your Rod. Shipping weight, 8 ounces.

Shotgun Cleaning Outfits



Any B. & M. Cleaning Rod can be fitted with a special Adaptor to take the parts illustrated herewith. They consist of one swab, wire brush and patch holder. When ordering always state gauge desired.

Brass Brushes

Brass Brushes are useful from time to time to loosen tight fouling, remove rust, metal fouling, etc., from the bore of the firearm. B. & M. carry a complete stock of these implements in all calibers. The use of brass or steel brushes in firearm bores should be avoided except when necessary.

The Proper Cleaning of Firearms

If the accuracy life of the barrels of our modern firearms is to be preserved, good cleaning outfits and intelligent care will be required. While there are several contributory causes leading to the eventual destruction of the accuracy life of firearm barrels, corrosion is foremost. Other causes, some preventable or partly so, include erosion of the bore by hot powder gases, excessive use of jacketed bullets and poor cleaning outfits.

Wiping the bore of a firearm after firing, even if a good cleaning solution is used, is not a positive guarantee that corrosion may not set in at a later date. Some of the products of the combustion of both primer and powder have been driven into the pores of the barrel steel and cannot be entirely removed by any preliminary cleaning operation. This condition is evidenced by the browned or blackened interior of the bore of any firearm which has been used to any extent. These products of combustion, if allowed to remain in the bore may attract moisture or "sweat." The bore of any arm in this condition is subject to corrosion.

The harmful products which remain after the piece has been fired are soluble in water and water is employed in modern cleaning methods to dissolve and wash them away. Preliminary cleaning should consist of a thorough swabbing of the bore, using patches saturated with warm water or better still, immerse the muzzle in warm water and pass a wet patch through the bore from the breech. The backward stroke of the patch then pumps the water into the bore, making the washing away simple indeed. This procedure should be followed by drying the bore thoroughly by the use of dry patches after which the bore should be coated with a good gun oil. The bore should be carefully examined from time to time and additional patches saturated with a good powder solvent passed through it. Arms to be stored should be cleaned as above and then coated with grease. Coating the bore with grease should not immediately follow preliminary cleaning since the bore may corrode beneath the grease.

Lead Fouling

Leading of the bore of firearms in good condition is not often encountered when properly loaded ammunition is used. Revolvers usually cause the most trouble and often much experimentation is required before a remedy for the trouble is found.

A rough or rust pitted bore will lead for obvious reasons. There is no remedy except to re-barrel the arm if lead alloy bullets are to be used.

Proper bullet lubrication is important. A proper lubricant should be used. Bullet Mould cavities must be large enough to cast bullets, which after resizing, retain lubrication grooves deep enough to carry sufficient lubricant. Cast bullets not lubricated sufficiently or which carry no lubricant will lead the bore excessively.

Cast bullets driven at velocities greater than those recommended under "Cast Bullets," may strip and fail to rotate properly causing lead to be deposited in the bore.

Cartridge cases should be crimped evenly on lead bullets, and no more than is necessary to hold the bullet stationary under recoil or against magazine springs. Cases unevenly and severely crimped tend upon discharge to strip pieces from the sides of lead bullets which leads to inaccuracy and leading.

Wear may cause improper alignment of the revolver cylinder with the bore. A bullet passing from an improperly aligned cylinder strikes the bore off center and is deformed. Leading is a frequent result of this condition.

Bullets cast from too soft an alloy may expand when passing from the cylinder of a revolver or through the throat of a rifle and become over-size for the bore. Bullets, especially for use in revolvers, should be cast hard enough to withstand this "jump." In rifle ammunition the bullet can usually be seated so that when the cartridge is chambered, the bullet will nearly touch the lands, thus reducing the "free jump" to a minimum. Since the bullet begins to rotate only after it is in connection with the lands of the barrel, it is evident that the more rapid the forward motion of the bullet at the instant it hits the lands, the more difficult it is for the lands to impart rotary motion to it without excessive striping. The tendency to strip is present in all arms and, when excessive, results in leading. The remedies are:—reduce the "free jump" of the bullet to a minimum, cast the bullet from the hardest alloy practicable or reduce the powder charge.

Firing rapidly may heat the barrel and cause leading.

Lead fouling can usually be removed by the use of a good brass brush. "Blue Ointment" obtainable in any drug store can also be used. The bore of the barrel is coated with this ointment and then vigorously wiped. It does not harm steel and can be allowed to remain in the barrel indefinitely.

Metal Fouling

Modern jacketed bullets have aided materially in making metal fouling of rifle barrels less common. Cupro Nickle jacketed and especially some lots of service bullets made hurriedly during the two World Wars offend in this respect. Roughened bores will metal foul even when the bullet and other cartridge components are correct. In most instances, it will be found possible to remove these lumps or patches by scrubbing with a good brass brush and especially will this be found to be true if the process of metal fouling has not been permitted to progress to a very great extent or the cleaning not delayed too long. Barrels which have a tendency to metal foul should be watched closely and cleaned frequently.

When it is impossible to remove cupro-nickel metal fouling by the use of a good brass brush the following formula will be found very effective. This solution can be made up by any druggist and should be ordered in small quantities as required, since it quickly loses its strength.

Ammonia Persulphate.....	100 grains
Ammonia Carbonate.....	50 grains
Strong Ammonia (26%).....	1½ ounces
Water.....	½ ounce

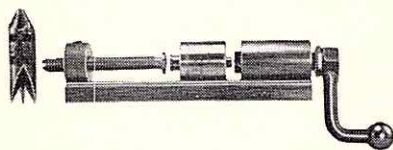
The solution should be kept in a tightly corked bottle. No portion of it may be used more than twice. The used portion must not be mixed with the unused solution but should be bottled separately. It should be used within 30 days from the time mixed and should not be used in a warm barrel.

To remove metal fouling from a barrel, plug the breech with a rubber stopper and fit a short piece of rubber tube over the muzzle. Fill the bore through this tube with the solution and let stand not more than 20 minutes. This solution will be a deep indigo blue when it is poured out and the treatment should be repeated as long as the spent solution shows this color.

This ammonia solution has no appreciable action on steel when not exposed to the air but, if allowed to evaporate on steel, will attack it rapidly. The barrel therefore must be thoroughly washed with water and dried as soon as the solution is poured out or it will be spoiled with rust. Care should be exercised to avoid spilling the solution in the receiver. After the treatment, the bore should be coated with a smokeless powder solvent and gun oil.

Shooters' Accessories

As cartridge cases are used over and over again, they have a tendency to lengthen and the wall of the neck thickens. While this is true to a certain extent with all calibers of cases, the condition is more noticeable in the high intensity sharp shouldered cases used in our more modern rifles and most of the "wildcat" calibers in common use. There is in most arms a tolerance in the chamber to accommodate this condition but, when the case becomes too long, the muzzle jams against the forward part of the chamber where the rifling begins and causes difficult chambering of the cartridge and it might even be buckled if forced. Such cartridge cases may be shortened by means of a file but, if uniformity is desired, we recommend the use of a Case Trimmer.



Wilson Case Trimmer.

The Wilson make shown here is now manufactured with a $\frac{1}{2}$ inch cutter, this tool will handle all calibers of cases from 22 to 45 for which shell holders are available. Between one caliber and another, the only difference in this tool is the case holder. Therefore, having the Wilson Trimmer in one caliber, to adapt for another caliber, you need purchase the proper holder only. Included with each trimmer is a hardened steel burring tool, illustrated at the left above. This tool

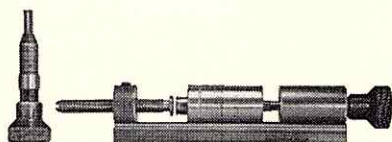
quickly removes the sharp edges both inside and outside of the case muzzle left by the trimmer and handles all calibers within the range of the trimmer. (It is also a handy tool to have in your reloading outfit even though you do not own a case trimmer. Bullets will seat more easily and uniformly in cases when the inside edge of the case muzzle is reamed out slightly.)

Shell holders, unhardened, are stocked in the following rifle calibers—calibers listed within parentheses are served by the same shell holder: 22 Hornet, 22 Lovell Reg., 2-R Lovell (218 Bee, 25-20,) 219 Donaldson, 222 Rem., (219 Zipper, 22 Sav., 25-35,) 220 Swift, 243 Rockchucker, (22-250, 250 Sav.), (25, 30, 32 Rem., 30-30, 32 Win. Spl.,) (257 Rob'ts, 244 Rem., 7 m/m,) (243, 308, 358 Win.,) (257, 7 m/m, 270, 300, 375 Weatherby Mag.,) 6.5 Norma, 7 x 61 Sharpe & Hart, 7.62 Russian, (270 Win., 280 Rem., 30-06,) 30 M-1 Carbine, 300 Sav., 30-40 Krag, 300 Mag., 303 British, 32-20, 32-40, 8 m/m, 33 Win., 348 Win., 35 Win., 35 Rem., 9 m/m Luger, 375 Mag., 378 Weatherby Mag., (38-40, 38 WCF,) 38-55, (44-40, 44 WCF,) 45-70 and 458 Win.

Hardened holders are stocked in these pistol calibers: 357 Magnum, 38 Spl., 44 Magnum, 44 S & W Spl., 45 ACP, and 45 Colt.

The Wilson Case Trimmer also acts as an accurate jig when the Wilson Inside Neck Reamer and Primer Pocket Reamer, shown below, are used.

Wilson Inside Neck Reamer



Inside Neck Reamer.

Available in 22, 220, 6 mm, 25, 6.5 mm, 270, 7 mm, 30, 8 mm, 348, 35 and 375 calibers only. Illustration at left shows use of reamer with Wilson Case Trimmer. The reamers are made from .002" to .003" larger than standard bullets in each caliber. If case necks have thickened and reduced clearance to below that figure, the reamer will remove that excess metal quickly and easily. Besides its value in

producing more accurate handloads, this reamer is an important safety device.

The .22 reamer is about .001" smaller than the 220 and is intended for use with cases like the 22 Hornet, 218 Bee, Lovell, etc. The .220 reamer is intended for use with the Zipper, Wasp, 22-250, 220 Swift, etc.

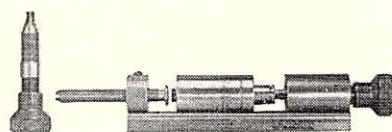
The Inside Neck Reamer consists of the Reamer and Handle only and not the trimmer parts shown above. These tools should be used on fired cases only.

Complete instructions for their use accompany all reamers.

Wilson Primer Pocket Reamer

As used to remove crimp from 30-06 Government cases

This Reamer is designed for use with the Wilson Case Trimmer but may be used as a separate tool. Its use is for the removal of the crimp in cases where the



Wilson Primer Pocket Reamer.

primer has been crimped in. The reamer is designed so that it cannot go too far, for the end of the reamer contacts the bottom of the pocket and stops cutting action. The profile of the reamer is proportioned so that the edge of the pocket is rounded before the end of the reamer strikes the bottom. Thus the crimp is removed and the edge rounded in one operation.

This Primer Pocket Reamer may also be used to enlarge the primer pockets of Government made caliber 45 ACP cases

to take the regular size commercial primers.

The Primer Pocket Reamer consists of the reamer and handle only and not the trimmer parts shown above.

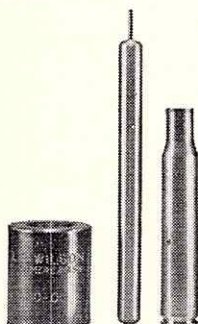
Instructions for its use are included with the Tool.

Wilson Cartridge Case Gauges

Available only in calibers 222 Remington, 220 Swift, 220 Wilson Arrow, 22-250, 243 Winchester, 244 Remington, 257 Roberts, 250 Savage, 270 Winchester, 7 m/m, 280 Remington, 8 m/m Mauser, 300 Savage, 300 Magnum, 308 Winchester, 30-06 and 358 Winchester.

If head projects above upper step, the case is too long and will function with difficulty in a properly headspaced rifle. If head drops below lower step the case is too short and may rupture when fired. Cases of correct dimensions will stop between

the steps. The opposite end of the gage checks overall length. If the mouth of the case projects above the upper step, the case is too long and should be trimmed to proper length.



Wilson Punch and Base Set

While made in all popular calibers, it is designed principally for removing crimped in primers from caliber 30-06 Government cases. The punch has an inserted point, heat treated for maximum strength, and will positively stand up. The base is recessed on one end to support the head of the case and the other end is counter bored to provide clearance for about forty driven-out primers. Needless to say, this set should be used for the removal of fired primers only.

← Wilson Punch and Base Set.



Forster Precision Case Trimmer.

The Forster Precision Case Trimmer is also very popular with hand loaders. In this tool the case is gripped at the base by a collet and the muzzle is guided by means of a pilot. The final length of the case is determined by an adjustable stop collar on the shaft of the cutter. Means for making a finer adjustment within .001" or less is provided by the employment of a set screw in the collar.

When ordering the Forster Tool, state

the caliber or calibers for which it is wanted.

Three collets are available which will accommodate all popular calibers as follows:

Collet No. 1: 30-06, 270 Winchester, 308 Winchester, 401 Winchester, 300 Savage, 250 Savage, 222 Remington, 35 Remington, 22/250, 8 m/m Mauser, 257 Roberts, 220 Swift, 7 m/m Mauser, 45 A.C.P., 300 and 375 Magnum, 30 and 35 Newton, 303 British, 38-40, 44-40, 22 Lovell, 45 Colt, 44 Special, 243 Winchester, 244 Remington and 358 Winchester.

Collet No. 2: 22 Hornet, 218 Bee, 219 Zipper, 219 Wasp, 22 Savage HP., 25-20, 25-35, 30-30, 32-20, 32 Special, 32-40, 25, 30 and 32 Remington, 9 m/m Luger, 45 Colt, 44 Special, 38-55 and 303 Savage.

Collet No. 3: 22 Hornet, 30-40, 30 Carbine, 38 Special, 357 Magnum, 35 and 405 Winchester.

Order Pilots by caliber. A caliber 22 pilot will accommodate all caliber 22 cartridges, 25 the same, etc.

Also available as extras are Inside Neck Reamers, Primer Pocket Cleaner and Center, Primer Pocket Cleaner Only, Case Length Gauge and Case Deburring Tool. The Deburring Tool is not included with the Forster Case Trimmer.

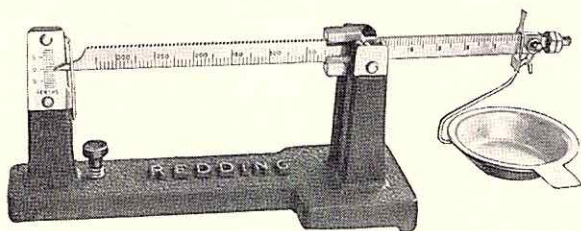
Instructions are enclosed with each tool. They are priced in the B. & M. Price List.

Scales

Scales are used by many handloaders who desire to verify the weight of each charge when making up loads developing maximum pressures and velocities. Scales are useful in verifying slide settings of powder loaders, in experimental loading, weighing bullets, etc. See section "Checking the Slide Settings of the B. & M. Visible Powder Measure" page 38. Shooters frequently hand-weigh charges desired for target loads when extreme accuracy is sought. We furnish two types of Scales, each admirably suited for the purposes enumerated above.

Redding Powder and Bullet Scale

Engineered and designed to meet the needs of the great army of handloaders, the Redding scale combines accuracy and ease of operation to an unequalled degree. These features plus attractive appearance and low cost make it the logical choice of beginner and veteran reloader alike.

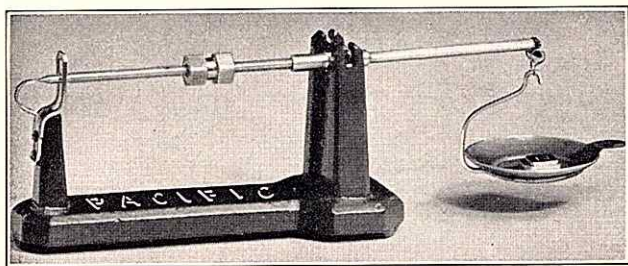


Redding Powder and Bullet Scale.

The sturdy brass beam is clearly graduated each side of the main bearing—each graduation at left equalling five grains and each graduation at right equalling one tenth grain, for a total capacity of 325 grains. Pointer at left end of beam indicates a tenth grain over and under scale—eight tenths each side of zero. Very useful in checking variations of powder charges or bullets without further adjustment of counterpoises after initial setting. Makes the job of selecting bullets by weight fast, easy and accurate. Each scale is individually tested and adjusted against U. S. Bureau of Standards approved master weights and guaranteed accurate to a tenth grain. Packed in strong, reinforced box with simple directions for assembly and operation.

Shipping weight, 3 pounds.

Pacific Powder and Bullet Scale



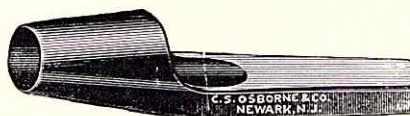
This is the Pacific Scale. It is an extremely accurate scale and is reasonably priced. Sensitive to 1/10th of a grain. A set of weights consists of four 1/10 grain weights, one each 1/2, 1, 2, 3, 4, 5, and 6, and two 20-grain weights. With this combination, you can accurately weigh by one tenth grains, any powder charge desirable. Capacity 242 grains.

Shipping weight, 3 pounds.

Osborne Wad-Cutter

(For cutting Rifle and Revolver Wads)

These round drive punches are forged from the best grade of tool steel, carefully hardened and tempered. The holes taper back from the cutting edge so that the wads clear freely, and only a light blow is required with a mallet to cut with ease. Osborne Wad-cutters may be had in practically any size for rifle and revolver calibers.



Osborne Wad-cutter.

Osborne Wad-Cutter

22 to 25 caliber	} For prices see our regular Price List.
27 to 32 caliber	
38 to 40 or .410 caliber	
44 to 45 caliber	

Ideal Wad-Cutters 12, 16, 20 and 410 Gauges Only

Shipping weight, 8 ounces.

Shot, Buckshot and Round Lead Balls

We regularly carry in stock the following sizes of Shot, Buckshot and Round Lead Balls. Lead Balls, when used in rifles, should be slightly larger than groove diameter. Buck Shot should always be chambered in the MUZZLE of a choke bore shotgun.

CHILLED AND DROP SHOT

Number	Diameter	Approximate No. per Ounce
Dust	.04"	4565
12	.05"	2326
11	.06"	1346
10	.07"	848
9½	.095"	688
9	.08"	568
8½	.085"	472
8	.09"	399
7½	.095"	338
7	.10"	291
6	.11"	218
5	.12"	168
4	.13"	132
3	.14"	106
2	.15"	86
1	.16"	71
B	.17"	59
Air Rifle	.175"	55
BB	.18"	50
BBB	.19"	42

COMPRESSED BUCKSHOT

Western	Number	American	Diameter	Approximate No. per Pound
9		3	.25"	299
8			.26"	263
7½		2	.27"	238
7			.28"	232
6			.29"	186
5		1	.30"	152
4		0	.32"	144
3		00	.34"	128
2		000	.36"	112
1			.38"	96

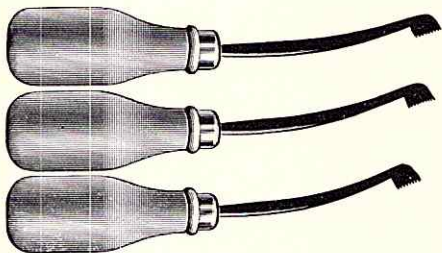
LEAD BALLS

.44"	50
.45"	48

To eliminate errors: Please specify diameter wanted.

Price: See current Price List.

WARNER GUN CHECKERING TOOLS



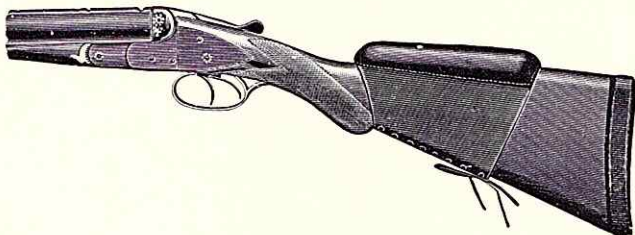
For Set of 3 Tools
16 Line—\$4.00

The illustration shows the Checkering Tools $\frac{1}{3}$ of actual size. These are identical to those used in some of the New England gun factories. The No. 1 tool is a double line spacer (checkering). The No. 2 is a double line Bordering Tool and No. 3 is a single line rasp or Cleaning Tool. They are all finish hand filed. The metal is not hard so that they can easily be kept sharp with a file.

Swiss Pattern files, 3 square, for sharpening No. 1 Tool 75c each. Round Files for the No. 2 Tool 75c each. Bent 3-square Rifflers—\$1.50 each.

"Send me another set of Checkering Tools. Once before I had a set of these and did better with them than with any of the rest."—C.A.P., Alaska.

Jostam New Monte Carlo Cheek Pads



These Pads are made of fine leather and are designed to be laced on any stock. They raise the comb of any stock and particularly adapt low combed stocks for comfortable use when telescope sight equipment is installed. They are furnished in four heights—No. 2, $\frac{1}{8}$ "; No. 3, $\frac{1}{4}$ "; No. 4, $\frac{1}{2}$ " and No. 5, $\frac{3}{4}$ ".

Shipping weight, 8 ounces.

B. & M. Bluing Solution

This is the same solution which is used by us to blue our own products. 4 ounce rubber stoppered bottle—more than enough for one gun barrel, \$1.00. Full instructions for use accompany each bottle.

Shipping weight, 10 ounces.

Gun Slings

$\frac{7}{8}$ ", 1" and 1 $\frac{1}{4}$ " Whelen Type Leather Slings
1" and 1 $\frac{1}{4}$ " Military Type Leather Slings

These Slings are manufactured from exceptionally good quality leather and are guaranteed to last a lifetime.

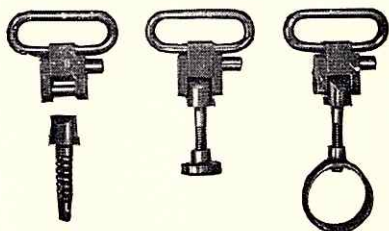
Shipping weight, 8 ounces.

Jaeger Quick Release Swivels

These Swivels are instantly detachable by means of snaps and are noiseless when used with the correct width of anti-rattle Screw Eyes. They are designed for use with the $\frac{7}{8}$ ", 1" and $1\frac{1}{4}$ " Whelen Sling listed above. Can be adapted to practically all rifles. Prices shown in current Price List.

Shipping weight, 8 ounces.

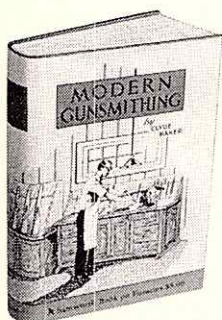
Also available in plain type.



11

We carry in stock the Samworth Books on Firearms

An extensive series of authoritative and practical works gotten up and published by men with a lifetime of experience in the use of firearms. These are not copies of manufacturer's catalogs or other previously published material. Each is a highly original and specialized treatise relating solely to its particular subject. We can unhesitatingly recommend each and every one of them.

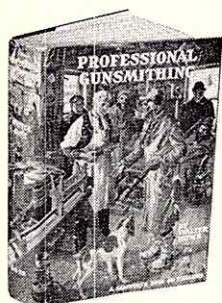


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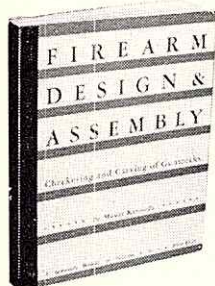
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- Gunsmithing, Dunlap, over 800 pages. Latest of the Samworth books on gunsmithing. Covers every phase of the art. \$7.50
- Hatcher's Notebook, Hatcher. A revision of an old classic by the technical editor of the American Rifleman. 625 pages, 150 of which are all new material. An N. R. A. library book. \$7.50
- Ultimate in Rifle Precision, Whelen. \$7.95
- Textbook of Automatic Pistols, Wilson. \$6.00
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- Speer Handbook No. 1. \$2.00
- Ideal Handbook. \$2.00
- Ideal Handbook of Cast bullets. \$2.00
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We stock many other titles.
See latest Price List for further information.

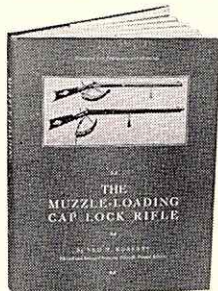
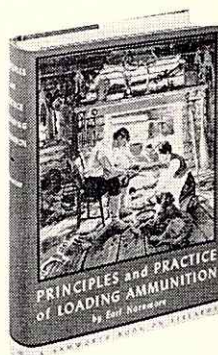
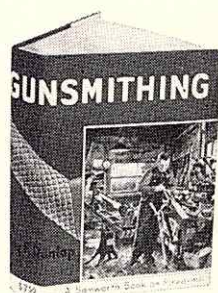


Table of Average Ballistics of Rifle and Revolver Cartridges

The following table represents latest standard velocity, energy and trajectory figures as adopted by the Sporting Arms and Ammunition Manufacturers Institute.

Muzzle Velocity, sometimes referred to as Initial Velocity, is the velocity of the bullet at the muzzle of the gun. The rate of travel is given here in feet per second (f.s.), the distance which the bullet would travel in one second if its velocity were constant. The unit of measurement of Energy is the foot-pound, which is equal to the work required to lift a pound weight one foot. Shooters should note that the energy, expressed in foot pounds possessed by a bullet, is not a good index to its shocking power. The design of the bullet and the nature of the wound it inflicts largely govern this feature. A full jacketed bullet will normally pass through the body of a game animal and in so doing only expends a portion of its energy. An expanding bullet which is brought to a stop in the body of game imparts all of its remaining energy to it and therefore has greater shocking power.

Trajectory is defined as the curve described by the axis of a bullet in flight. The trajectory figures given indicate the height at mid-range of this curve in inches above the horizontal plane from gun muzzle to point of impact. For example, the trajectory figure at 200 yards of the 30-06 Springfield cartridge, 180 grain weight bullet, is given as 3.1". This indicates that the path described by the bullet in flight is at 100 yards 3.1" higher than the horizontal plane between gun muzzle and the point of impact at 200 yards.

Figures denoting the penetration of rifle cartridges have been omitted because they are of little practical value.

Table of Average Ballistics of Rifle Cartridges

Caliber	Bullet		Velocity				Energy				Mid Range Trajectory		
	Weight Grains	Type	Muzzle	100 Yards	200 Yards	300 Yards	Muzzle	100 Yards	200 Yards	300 Yards	100 Yards	200 Yards	300 Yards
22 Short.....	29	Lead	965	810	....	....	60	42	....	....	5.6	....	....
22 Short Hi-Speed.....	29	Lead	1125	920	....	....	81	54	....	....	4.3	....	....
22 Long Hi-Speed.....	29	Lead	1240	965	....	....	99	60	....	....	3.8	....	....
22 Long Rifle.....	40	Lead	1145	975	....	....	116	84	....	....	4.0	....	....
22 LR Hi-Speed.....	40	Lead	1335	1045	....	....	158	97	....	....	3.3	....	....
22 WRF.....	45	Lead	1450	1110	....	....	210	123	....	....	2.7	....	....
.218 Bee.....	46	OP	2860	2160	1610	1200	835	475	265	145	0.7	3.8	11.5
.219 Zipper.....	56	OP	3110	2440	1940	1550	1200	740	465	300	0.6	2.9	8.3
22 Hornet.....	45	SP	2690	2030	1510	1150	720	410	230	130	0.8	4.3	13.0
22 Hornet.....	46	OP	2690	2030	1510	1150	740	420	235	135	0.8	4.3	13.0
.222 Remington.....	50	SP	3200	2650	2170	1750	1140	780	520	340	0.5	2.5	7.0
.220 Swift.....	48	SP	4110	3490	2930	2440	1800	1300	915	635	0.3	1.4	3.8
22 Savage IIP.....	70	SP	2800	2440	2110	1840	1220	925	690	525	0.6	2.9	7.5
243 Winchester.....	80	SP	3500	3080	2720	2410	2180	1690	1320	1030	0.4	1.8	4.7
243 Winchester.....	100	SP	3070	2790	2540	2320	2090	1730	1430	1190	0.5	2.2	5.5
244 Remington.....	75	PtSP	3500	3070	2660	2290	2040	1570	1180	875	0.4	1.9	4.9
244 Remington.....	90	PtSP	3200	2850	2530	2230	2050	1630	1280	995	0.5	2.1	5.5
25-20 Winchester Rep.....	60	OP	2250	1660	1240	1030	675	365	265	140	1.2	6.3	21.0
25-20 Winchester Rep.....	86	SP	1460	1180	1030	940	405	265	200	170	2.6	12.5	32.0
25 Remington.....	117	SP	2320	1980	1700	1470	1400	1020	750	560	1.0	4.5	11.5
25-35 Winchester.....	117	SP	2300	1910	1600	1340	1370	945	665	465	1.0	4.6	12.5
250 Savage.....	87	SP	3030	2660	2330	2060	1770	1370	1050	820	0.6	2.5	6.4
250 Savage.....	100	ST	2820	2460	2140	1870	1760	1340	1020	775	0.6	2.9	7.4
257 Roberts.....	87	SP	3200	2840	2500	2190	1980	1560	1210	925	0.5	2.2	5.7
257 Roberts.....	100	PtSPCL	2900	2580	2280	2000	1870	1480	1150	885	0.6	2.7	6.7
257 Roberts.....	100	ST	2900	2540	2210	1920	1870	1430	1080	820	0.6	2.7	7.0
257 Roberts.....	117	SP	2650	2280	1950	1690	1820	1350	985	740	0.7	3.4	8.8
270 Winchester.....	100	SP	3580	3160	2770	2400	2840	2210	1700	1280	0.4	1.7	4.5
270 Winchester.....	130	ST	3140	2850	2580	2320	2840	2340	1920	1550	0.5	2.1	5.3
270 Winchester.....	150	SP	2800	2400	2040	1750	2610	1920	1380	1020	0.7	3.0	7.8
7 m/m Mauser.....	175	SP	2490	2170	1900	1680	2410	1830	1400	1100	0.8	3.7	9.5
.280 Remington.....	125	PtSPCL	3140	2840	2550	2280	2740	2240	1800	1440	0.5	2.2	5.5
.280 Remington.....	150	PtSPCL	2810	2580	2360	2130	2630	2220	1850	1510	0.6	2.6	6.5
.280 Remington.....	165	SPCL	2770	2460	2180	1930	2310	2220	1740	1360	0.7	2.9	7.4
7.62 m/m Russian.....	145	IICP	2820	2560	2320	2090	2560	2110	1730	1400	0.6	2.7	6.5
30-30 Winchester.....	150	OP	2410	2020	1700	1430	1930	1360	960	680	0.9	4.2	11.0
30-30 Winchester.....	160	MC	2220	1870	1600	1370	1750	1240	910	665	1.0	5.0	13.0
30-30 Winchester.....	170	SP	2220	1890	1630	1410	1860	1350	1000	750	1.2	4.6	12.5
30 Remington.....	160	MC	2220	1870	1600	1370	1750	1240	910	665	1.0	5.0	13.0
30 Remington.....	170	SP	2220	1890	1630	1410	1860	1350	1000	750	1.2	4.6	12.5
30-40 Krag.....	180	SP	2470	2120	1830	1590	2440	1790	1340	1010	0.8	3.8	9.9
30-40 Krag.....	180	ST	2470	2250	2040	1850	2440	2020	1660	1370	0.8	3.5	8.5
30-40 Krag.....	220	SP	2200	1990	1800	1630	2360	1930	1580	1300	1.0	4.4	11.0

Table of Average Ballistics of Rifle Cartridges—Cont.

Caliber	Bullet		Velocity				Energy				Mid Range Trajectory		
	Weight Grains	Type	Muzzle	100 Yards	200 Yards	300 Yards	Muzzle	100 Yards	200 Yards	300 Yards	100 Yards	200 Yards	300 Yards
308 Winchester	110	SP	3340	2810	2340	1920	2730	1930	1340	900	0.5	2.2	6.0
308 Winchester	150	ST	2860	2570	2300	2050	2730	2200	1760	1400	0.6	2.6	6.5
308 Winchester	180	ST	2610	2390	2170	1970	2720	2280	1870	1540	0.8	3.1	7.4
30-06 Springfield	110	SP	3420	2880	2400	1970	2850	2020	1410	945	0.4	2.1	5.6
30-06 Springfield	150	SP	2970	2620	2300	2010	2930	2280	1760	1340	0.6	2.5	6.5
30-06 Springfield	150	ST	2970	2670	2400	2130	2930	2370	1920	1510	0.6	2.4	6.1
30-06 Springfield	150	BPT	2970	2710	2470	2240	2930	2440	2030	1670	0.5	2.4	6.0
30-06 Springfield	150	FP	2970	2710	2470	2240	2930	2440	2030	1670	0.5	2.4	6.0
30-06 Springfield	180	SP	2700	2330	2010	1740	2910	2170	1610	1210	0.7	3.1	8.3
30-06 Springfield	180	ST	2700	2470	2250	2040	2910	2440	2020	1660	0.7	2.9	7.0
30-06 Springfield	180	BPT	2700	2480	2280	2080	2910	2460	2080	1730	0.7	2.9	6.9
30-06 Springfield	180	FjBt	2700	2520	2350	2190	2910	2540	2200	1900	0.6	2.8	6.7
30-06 Springfield	220	SP	2410	2120	1870	1670	2830	2190	1710	1360	0.8	3.9	9.8
300 Savage	150	SP	2670	2350	2060	1800	2370	1840	1410	1080	0.7	3.2	8.0
300 Savage	150	BPT	2670	2410	2170	1950	2370	1930	1570	1270	0.7	3.0	7.5
300 Savage	180	SP	2370	2040	1760	1520	2240	1660	1240	920	0.9	4.1	10.5
303 British	215	SP	2180	1900	1660	1460	2270	1720	1310	1020	1.1	4.9	12.5
300 H. & H. Magnum	180	ST	2920	2670	2440	2220	3400	2850	2380	1970	0.6	2.4	5.8
300 H. & H. Magnum	220	ST	2620	2370	2150	1940	3350	2740	2260	1840	0.7	3.1	7.7
303 Savage	180	SP	2140	1810	1550	1340	1830	1310	960	715	1.1	5.4	14.0
303 Savage	190	SP	1980	1680	1440	1250	1650	1190	875	660	1.3	6.2	15.5
32-20 Winchester	80	OP	2100	1430	1090	950	780	365	210	160	1.5	8.5	24.5
32-20 Winchester	100	SP	1290	1060	940	840	370	250	195	155	3.3	15.5	38.0
32 Remington	170	SP	2220	1890	1610	1400	1860	1350	975	740	1.0	4.9	13.0
32 Winchester Special	170	SP	2280	1870	1560	1330	1960	1320	920	665	1.0	4.8	13.0
32-40 Winchester	165	SP	1440	1250	1100	1030	760	570	445	390	2.4	11.0	28.0
33 Winchester	200	SP	2190	1860	1600	1390	2130	1530	1140	855	1.1	5.0	13.0
8 x 56 mm Mann-Shoen	200	SP	2190	1880	1630	1430	2130	1570	1180	905	1.1	4.9	12.7
8 mm Lebel	170	SP	2640	2260	1960	1700	2630	1930	1450	1090	0.7	3.4	8.9
8 x 57 mm Mauser	170	SP	2570	2140	1790	1520	2490	1730	1210	870	0.8	3.9	10.5
348 Winchester	150	SP	2890	2360	1860	1420	2780	1860	1150	670	0.6	3.2	9.0
348 Winchester	200	SP	2530	2140	1820	1570	2840	2030	1470	1090	0.8	3.8	10.0
348 Winchester	250	ST	2350	1970	1660	1410	3060	2150	1530	1100	0.9	4.4	11.5
351 Winchester Self Loading	180	SP	1850	1560	1310	1140	1370	975	685	520	1.5	7.8	21.5
358 Winchester	200	ST	2530	2210	1910	1640	2840	2160	1610	1190	0.8	3.6	9.4
358 Winchester	250	ST	2250	2010	1780	1570	2810	2230	1760	1370	1.0	4.4	11.0
35 Remington	200	SP	2210	1830	1540	1310	2170	1490	1050	760	1.1	5.2	14.0
375 H. & H. Magnum	270	SP	2740	2460	2210	1990	4500	3620	2920	2370	0.7	2.9	7.1

Table of Average Ballistics of Rifle Cartridges—Cont.

Caliber	Bullet		Velocity				Energy				Mid Range Trajectory		
	Weight Grains	Type	Muzzle	100 Yards	200 Yards	300 Yards	Muzzle	100 Yards	200 Yards	300 Yards	100 Yards	200 Yards	300 Yards
375 H. & H. Magnum.....	300	ST	2550	2280	2040	1830	4330	3460	2770	2230	0.7	3.3	8.3
375 H & H Magnum.....	300	FP	2550	2180	1860	1590	4330	3160	2300	1680	0.7	3.6	9.3
38-40 Winchester.....	180	SP	1330	1070	960	850	705	455	370	290	3.2	15.0	36.5
38-55 Winchester.....	255	SP	1320	1160	1050	1000	985	760	625	565	2.9	13.0	32.0
401 Winchester Self Loading	200	SP	2190	1650	1220	1010	2130	1210	660	455	1.2	6.3	19.0
405 Winchester.....	300	SP	2260	1840	1460	1170	3400	2250	1420	910	1.0	5.1	14.0
44-40 Winchester.....	200	SP	1310	1050	940	830	760	490	390	305	3.3	15.0	36.5
45-70 Government.....	405	SP	1320	1160	1050	990	1570	1210	990	880	2.9	13.0	32.5
458 Winchester.....	500	FP	2125	1860	1630	1420	5010	3840	2950	2240	1.1	5.1	13.0
458 Winchester.....	510	SP	2125	1850	1600	1390	5110	3880	2900	2190	1.1	5.1	13.5

OP—Open Point; SP—Soft Point; ST—Silver Tip (Winchester); HCP—Hollow Copper Point; MC—Metal Cased; BPt—Bronze Point (Remington); FP—Full Patch; FjBt—Full Jacket Boat tail.

Table of Average Ballistics of Pistol and Revolver Cartridges

CALIBER	Weight of Bullet (Grains)	Type of Bullet	Barrel Length	Muzzle Velocity	Muzzle Energy	Penetration $\frac{3}{8}$ " Pine Boards
25 Auto (6.35 m/m).....	50	MC	2"	820	75	3
30 Mauser Auto (7.63 m/m).....	86	MC	5 $\frac{1}{2}$ "	1420	385	11
30 Luger (7.65 m/m).....	93	MC	4 $\frac{1}{2}$ "	1250	323	11
32 Auto (7.65 m/m).....	71	MC	4"	980	152	5
32 S. & W.....	85	Lead	3"	720	98	3
32 S. & W. Long.....	98	Lead	4 $\frac{1}{4}$ "	795	138	4
32 Short Colt.....	80	Lead	4"	800	114	3
32 Long Colt.....	82	Lead	4"	800	117	3
32 Colt New Police.....	98	Lead	4"	795	138	3
32-20.....	100	Lead	6"	1030	271	6
357 Magnum.....	158	MP	8 $\frac{3}{8}$ "	1450	690	12
9 m/m Luger.....	115	FP	4"	1150	365	10
9 m/m Luger.....	124	MC	4"	1150	365	...
38 S. & W.....	145	Lead	4"	745	179	...
38 Special.....	158	Lead	6"	870	266	7
38 Special.....	150	Lead	5"	1175	460	9
38 Special.....	148	Lead	6"	770	195	...
38 Special.....	200	Lead	6"	745	247	7.5
38 Short Colt.....	130	Lead	6"	770	171	4
38 Long Colt.....	150	Lead	6"	785	205	6
38 Colt New Police.....	150	Lead	4"	695	161	4
38 Auto.....	130	MC	5"	1300	488	10
380 Automatic.....	95	MC	3 $\frac{3}{4}$ "	970	199	5.5
38-40.....	180	SP	5"	975	380	6
41 Long Colt.....	200	Lead	6"	745	247	3
44 S. & W. Russian.....	246	Lead	6 $\frac{1}{2}$ "	770	324	4
44 S. & W. Special.....	246	Lead	6 $\frac{1}{2}$ "	770	324	4
44 Magnum.....	240	Lead GC	6"	1570	1310	...
44-40.....	200	SP	7 $\frac{1}{2}$ "	975	422	6
45 Colt.....	255	Lead	5 $\frac{1}{2}$ "	870	429	6
45 Colt.....	250	Lead	5 $\frac{1}{2}$ "	870	421	...
45 Auto.....	230	MC	5"	860	378	6
45 Auto.....	185	WC	5"	870	311	...
45 Auto Rim.....	230	Lead	5 $\frac{1}{2}$ "	820	343	6

MC—Metal Cased; FP—Full Patch; MP—Metal Point.

A Rifleman's Table of Weights and Measures

The unit of weight used in the United States and Great Britain is the pound. The weights of bullets and powders are given in the Avoirdupois System. The unit of length (space) employed is the foot. In Continental Europe and other parts of the world, the metric system of weights and measures is employed. Tables, which the rifleman frequently needs, are given below along with a conversion table.

WEIGHT

Avoirdupois System		Metric System	
27 $\frac{1}{2}$ grains.....	1 dram	1000 grams.....	1 kilogram
16 drams.....	1 ounce	1000 kilograms.....	1 metric ton
16 ounces.....	1 pound		
2000 pounds.....	1 ton		

NOTE:—The grain weight is the same in all tables; Avoirdupois, Apothecarie or Troy.
 1 pound Avoirdupois equals 16 ounces Avoirdupois or 7000 grains.
 1 pound Apothecaries or Troy equals 12 ounces Troy or Apothecaries or 5760 grains.
 1 ounce Avoirdupois equals 437.5 grains.
 1 ounce Apothecarie or Troy equals 480 grains.

1 grain.....	.064779 grams	1 gram.....	15.432 grains
1 oz. Avd.....	28.349 grams	1 gram.....	0.035274 ounces Avd.
1 lb. Avd.....	453.59 kg.	1 kg.....	2.2046 lbs.
1 cwt.....	50.802 kg.	1 kg.....	0.019684 cwt.
1 ton.....	1.0160 metric tons	1 metric ton.....	0.98421 tons

LENGTH

12 inches.....	1 foot	10 millimeters.....	1 centimeter
3 feet.....	1 yard	10 centimeters.....	1 decimeter
5 $\frac{1}{2}$ yards.....	1 rod	10 decimeters.....	1 meter
1 yard.....	0.91438 meters	1 meter.....	1.0936 yards
1 foot.....	0.30479 meters	1 meter.....	3.2809 feet
1 inch.....	2.5400 cm.	1 cm.....	0.39371 inches
1000 yards.....	914.38 meters	1 kilometer.....	1093.6 yards

PROPERTIES OF METALS WHICH THE HANDLOADER USES

	Lead	Tin	Antimony	Steel	Copper	Nickel
Specific Gravity.....	11.3	7.3	6.8	7.8	8.7	8.8
Melting Point (Fahr.).....	625	440	1160	2500	2000	3000
Weight per cubic inch in gr...	2880	1840	1710	1960	2250	2200

Rifling in Firearms

Firearms had been in use for more than one hundred years before rifling was invented. The knowledge that spinning a projectile adds to its steadiness in flight has been known since primitive times. The difficulty, in the case of firearms, lay in the application of the principle. Spiral grooving would spin a bullet if it were gripped tightly by the rifling. This principle was applied to sporting and target arms, but loading was slow and laborious because a tight fitting bullet had to be carefully forced down the full length of the barrel. Many attempts were made to overcome this difficulty by devising bullets with cupped bases which would pass freely down the bore and, when fired, expand into and grip the rifling. Some fair degree of success attended these efforts. The introduction of breech loading arm permitted the use of bullets which were large enough to grip the rifling and thus be rotated.

The grooves of the rifling in modern arms are usually cut three to five thousandths of an inch in depth. High places between these "grooves" are called "lands". Groove diameter of an ordinary barrel is about eight thousandths of an inch larger than the bore diameter. Shooters desiring to know the rate of twist of the rifling of any gun barrel may obtain this information in the following manner. Force a lead slug through the bore as explained previously under "Sizing and Lubricating Cast Bullets". Next drill a hole through this slug slightly smaller than the thread of your cleaning rod. Thread the rod into this slug, being careful not to expand it. Place a straight mark along the full length of the rod and start the slug into the rifle barrel until the slug is flush with the muzzle. With a lead pencil mark the muzzle exactly opposite the mark running up the rod. Now push the slug and the rod down the bore, watching the long mark on the rod until it makes one complete turn and comes back precisely to your mark on the gun muzzle.

The distance the rod travels will equal the rate of twist of the rifling. When starting the bullet in the barrel it is necessary to fit carefully the barrel lands into the cuts previously made by them in the bullet. The rate of twist in some of the older rifles is very slow, some being bored with only one twist in sixty inches, while to-day some of our modern rifles will have twists of one turn in $6\frac{1}{2}$ inches. A large proportion of modern rifles have a rate of twist equal to one turn in 10 to 12 inches. We call this matter of twist of rifling to the attention of handloaders because, while the bullet may be of the correct diameter for the barrel in question, it may not be of proper design and to obtain accuracy with it may be impossible. Long slender bullets require a proportionately quicker twist than do others to hold them point on while in flight. If such a bullet tends to "keyhole," the remedy is more power or speed, if obtainable with safety. If increased speed cannot be obtained, then accurate loads cannot be assembled with a long slender bullet and the remedy is to try one of a shorter design.

Table of Rate of Twist of Rifles and Groove Diameters

NAME AND CALIBER	MANUFACTURER	Twist in inches	Groove Diameters	
			Min. inches	Maximum
22 Short.....	All.....	20	.222	.2238
22 Long Rifle.....	All.....	16-17	.222	.2238
22 W. R. F.....	Winchester.....	14	.2255	.226
222 Remington.....	Remington.....	14	.224	.224
218 Bee.....	Winchester.....	16	.224	.224
219 Zipper.....	Winchester.....	16	.224	.224
22 Hornet.....	Winchester & Savage.....	16	.223	.224
220 Swift.....	Winchester.....	14	.224	.2245
22 Savage H. P.....	Savage.....	12	.226	.2265
243 Winchester.....	Winchester.....	10	.243	.2432
244 Remington.....	Remington.....	12	.243	.2432
25 Rim Fire.....	Stevens.....	16-17	.257	.2576
25-20 Single Shot.....	Stevens.....	13	.255	.257
25-20 Repeater.....	Remington & Marlin.....	12	.257	.2575
25-20 Repeater.....	Winchester & Savage.....	14	.257	.2575
25-35.....	Winchester & Savage.....	8	.257	.2575
25 Remington Rimless.....	Remington.....	10	.257	.2575
25-36 Marlin.....	Marlin.....	9	.257	.2575
257 Roberts.....	Remington.....	10	.256	.258
250-3000 Savage.....	Savage.....	14	.257	.258
6mm U. S. Navy.....	Remington.....	6½	.242	.244
6.5mm Mannlicher.....	Hoffman.....	7½	.263	.264
256 Newton.....	Hoffman.....	10	.265	.2655
270 Winchester.....	Winchester.....	10	.278	.2785
280 Ross.....	Ross.....	8.7	.289	.290
7mm Mauser.....	American.....	10	.2845	.2855
280 Remington.....	Remington.....	10½	.283	
30-30 Winchester.....	Winchester.....	12	.308	.3085
30-30 Winchester.....	Marlin & Savage.....	10	.308	.3085
30 Remington Rimless.....	Remington.....	12	.308	.3085
300 Savage.....	Savage.....	12	.308	.3089
30-40 Krag.....	U. S. Government & Winchester.....	10	.308	.310
30-1906 Springfield.....	U. S. Gov't Win. & Rem.....	10	.308	.3085

Table of Rate of Twist of Rifles and Groove Diameters

NAME AND CALIBER	MANUFACTURER	Twist in inches	Groove Diameters	
			Min. inches	Maximum
308 Winchester	Winchester	12	.308	.3085
300 H. & H. Magnum	Winchester	10	.308	.309
32-20	Winchester & Remington	20	.311	.312
32-20	Marlin	22	.311	.3125
32-40	All	16	.320	.3205
32 Winchester Special	Winchester	16	.320	.321
32 Remington Rimless	Remington	14	.319	.320
8mm Mauser	German	9-10	.314	.327
303 British	Winchester	12	.312	.314
303 British	Remington	9	.312	.314
303 Savage	Savage	10	.308	.309
33 Winchester	Winchester & Marlin	12	.338	.340
348 Winchester	Winchester	12	.348	.349
35 Remington Rimless	Remington	16	.356	.357
35 Winchester	Winchester	12	.358	.359
358 Winchester	Winchester	12	.358	.3581
375 H. & H. Magnum	Winchester	12	.376	.377
38-40 Winchester	Winchester & Marlin	36	.3995	.4005
38-40 Remington	Remington	20	.3995	.4005
38-55	Winchester & Savage	18	.379	.3795
38-55	Marlin	20	.379	.3795
38-56	Winchester	20	.379	.3795
40-60 Winchester	Winchester	40	.403	.405
40-60 Marlin	Marlin	20	.403	.405
405 Winchester	Winchester	14	.412	.414
44-40 Winchester	Winchester & Marlin	36	.428	.4295
44-40 Remington	Remington	20	.424	.426
45-70	U. S. Government	22	.457	.458
45-90	Winchester	32	.457	.459
50-95 Winchester	Winchester	60	.512	...
58 Government M. L.	U. S. Government	68	.590	...

Table of Rate of Twist of Revolvers and Groove Diameters

NAME & CALIBER	Manufacturer	Twist in inches	Standard Groove Diameter
22 Long Rifle.....	S. & W.	15R	.2235
22 Colt.....	Colt	14L	.222
30 Mauser.....	German	8	.309
30 Luger.....	.....	9.85R	.310
32 Colt Auto.....	Colt	16L	.311
32 S. & W.....	S. & W.	18 $\frac{3}{4}$ R	.313
32-20 Colt.....	Colt	14L	.312
32 Colt.....	Colt	16L	.312
357 Magnum.....	S. & W.	18 $\frac{3}{4}$ R	.357
357 Magnum.....	Colt	14L	.353 to .354
38 S. & W.....	S. & W.	18 $\frac{3}{4}$ R	.357
38 S. & W. Special.....	S. & W.	18 $\frac{3}{4}$ R	.357
38 Colt Special.....	Colt	16L*	.354
38 Colt Auto.....	Colt	16L	.356
38 Colt Revolver.....	Colt	16L	.354
38-40 Colt.....	Colt	16L*	.402
41 Colt.....	Colt	16L*	.402
44-40 Colt (old models).....	Colt	16L	.424
44-40 Colt (new models).....	Colt	16L	.427
44 S. & W. Special.....	S. & W.	20R	.427
44 Colt.....	Colt	16L	.427
45 Auto Colt Pistol.....	Colt	16L	.451
45 Auto Colt Pistol.....	S. & W.		.451
45 Colt.....	Colt	16L	.452

"R" indicates Right or Clock-wise.

"L" indicates Left or Counter clock-wise rifling twist.

*Since April 1953, twist is 14L.

Table of Bullet Seating Depths

The following is a table showing the generally accepted depth to which standard makes of bullets are seated in cartridge cases used in rifles. The handloader need not adhere closely to these figures except when maximum loads are used.

Caliber	Bullet	Seating Depth
22 Hornet.....	45 gr SP	.20"
22 Savage Hi-Power.....	70 gr SP	.40"
222 Remington.....	50 gr SP	.21"
220 Swift.....	48 gr SP	.15"
220 Swift.....	55 gr SP	.25"
244 Remington.....	75 gr Pt. SP	.25"
244 Remington.....	90 gr Pt. SP	.38"
243 Winchester.....	100 gr SP	.43"
243 Winchester.....	80 gr SP	.35"
25-20 Single Shot.....	86 gr SP	.40"
25-20 Repeater.....	60 gr OP	.28"
25-20 Repeater.....	86 gr SP	.45"
25 Remington.....	87 gr OP	.30"
25 Remington.....	117 gr SP	.45"
257 Roberts.....	87 gr OP	.25"
257 Roberts.....	100 gr OP	.35"
257 Roberts.....	117 gr OP	.45"
25-35 Winchester.....	87 gr OP	.30"
25-35 Winchester.....	100 gr OP	.35"
25-35 Winchester.....	117 gr SP	.43"
25-36 Winchester.....	117 gr SP	.55"
250 Savage.....	87 gr SP	.20"
250 Savage.....	100 gr OP	.35"
270 Winchester.....	130 gr OP	.30"
30 Remington.....	110 gr OP	.25"
30 Remington.....	170 gr SP	.50"
30-30.....	110 gr OP	.25"
30-30.....	150 gr OP	.30"
30-30.....	170 gr SP	.48"
300 Savage.....	110 gr OP	.20"
300 Savage.....	150 gr B. Pt.	.40"
300 Savage.....	180 gr SP	.40"
300 H & H Magnum.....	180 gr OP	.60"
308 Winchester.....	110 gr SP	.18"
308 Winchester.....	150 gr SP	.25"
308 Winchester.....	180 gr SP	.38"
30-06.....	110 gr OP	.18"
30-06.....	150 gr OP	.25"
30-06.....	173 gr FJ	.48"
30-06.....	180 gr SP	.38"
30-06.....	220 gr SP	.45"
30-40 Krag.....	110 gr OP	.18"
30-40 Krag.....	150 gr OP	.25"
30-40 Krag.....	173 gr FJ	.48"
30-40 Krag.....	180 gr SP	.40"
30-40 Krag.....	220 gr SP	.43"
303 Savage.....	190 gr SP	.53"
303 British.....	174 gr FJ	.43"
303 British.....	215 gr SP	.38"
32 Remington.....	110 gr OP	.20"
32 Remington.....	170 gr SP	.48"
32 Winchester Special.....	110 gr OP	.20"
32 Winchester Special.....	170 gr SP	.40"
32-20.....	80 gr OP	.20"
32-20.....	115 gr SP	.35"

32-40.....	110 gr OP	.20"
32-40.....	165 gr SP	.50"
33 Winchester.....	200 gr SP	.35"
348 Winchester.....	150 gr SP	.25"
348 Winchester.....	200 gr SP	.45"
35 Remington.....	150 gr OP	.20"
35 Remington.....	200 gr SP	.30"
35 Winchester.....	250 gr SP	.35"
358 Winchester.....	200 gr ST	.25"
358 Winchester.....	250 gr ST	.50"
375 H & H Magnum.....	300 gr SP	.45"
38-40.....	130 gr OP	.23"
38-40.....	180 gr SP	.30"
38-55.....	255 gr SP	.53"
405 Winchester.....	300 gr SP	.38"
44-40.....	200 gr SP	.30"
45-70.....	300 gr SP	.45"
45-90.....	300 gr SP	.43"
45-90.....	405 gr SP	.65"
6 m/m Navy.....	112 gr SP	.25"
6.5 m/m Mann. Sch.....	129 gr OP	.28"
6.5 m/m Mann. Sch.....	140 gr OP	.30"
6.5 m/m Mann. Sch.....	160 gr SP	.30"
7 m/m Mauser.....	139 gr FJ	.25"
7 m/m Mauser.....	175 gr FJ	.40"
7.62 m/m Russian.....	110 gr OP	.20"
7.62 m/m Russian.....	150 gr OP	.25"
7.62 m/m Russian.....	173 gr FJ	.47"
7.62 m/m Russian.....	220 gr SP	.38"
8 m/m Mauser.....	154 gr FJ	.25"
8 m/m Mauser.....	139 gr SP	.20"
8 m/m Mauser.....	170 gr SP	.27"
8 m/m Mauser.....	236 gr SP	.25"
9 m/m Mannlicher.....	280 gr SP	.38"

Table of Cartridge Case Lengths

The following is a table of the generally accepted over-all length of the more popular standard caliber cartridge cases and some of the custom made cases wherever a standard length has been generally agreed upon.

22 Hornet.....	1.40"	6.5 m/m Mann.....	2.15"
22 K. Hornet.....	1.39"	270 Winchester.....	2.54"
218 Bee.....	1.35"	275 H & H Magnum.....	2.85"
222 Remington.....	1.70"	280 Ross.....	2.61"
22 Savage Hi-power.....	2.05"	7 m/m Mauser.....	2.24"
219 Zipper.....	1.94"	280 Remington.....	2.54"
2 R Donaldson (Lovell).....	1.635"	7.62 m/m Russian.....	2.11"
22-250 (Varminter).....	1.905"	30 (7.63 m/m) Mauser.....	1.04"
219 Wasp (Rimless).....	1.747"	30 (7.65 m/m) Luger.....	.85"
219 Wasp (Rimmed).....	1.775"	30-30.....	2.04"
220 Swift.....	2.21"	30 Remington.....	2.05"
243 Winchester.....	2.04"	300 Savage.....	1.87"
244 Remington.....	2.235"	30-40 Krag.....	2.31"
25 Auto.....	.62"	30-03.....	2.62"
25-20 Repeater.....	1.33"	30-06.....	2.49"
25-20 Single-Shot.....	1.63"	308 Winchester.....	2.00"
25-35.....	2.04"	30 Newton.....	2.54"
25 Remington.....	2.05"	300 H & H Magnum.....	2.85"
250 Savage.....	1.91"	303 Savage.....	2.02"
257 Roberts.....	2.23"	303 British.....	2.21"
256 Newton.....	2.47"	32 S & W.....	.60"
6 m/m Navy.....	2.35"	32 Short Colt.....	.64"

Table of Cartridge Case Lengths (Continued)

32 Long Colt.....	.92"	38 Long Colt.....	1.03"
32 S & W Long.....	.92"	38 S & W Special.....	1.16"
32 Colt New Police.....	.92"	38 Colt Special.....	1.16"
32-20.....	1.31"	38 ACP.....	.90"
32 (7.65 m/m) ACP.....	.93"	38-40.....	1.31"
32 Winchester Special.....	2.04"	380 Auto.....	.68"
32 Remington.....	2.05"	38-55.....	2.13"
32-40.....	2.13"	9 m/m Luger.....	.76"
8 m/m Lebel.....	1.98"	40-82.....	2.39"
8 m/m Mann. Sch.....	2.22"	401 Winchester.....	1.50"
8 m/m Mauser.....	2.24"	405 Winchester.....	2.58"
33 Winchester.....	2.11"	44 S & W Russian.....	1.02"
348 Winchester.....	2.26"	44 S & W Special.....	1.17"
35 Winchester.....	2.42"	44 Magnum.....	1.30"
35 Remington.....	1.92"	44-40.....	1.31"
358 Winchester.....	2.00"	45 Colt.....	1.28"
375 H & H Magnum.....	2.85"	45 ACP.....	.90"
38 S & W.....	.77"	45 Auto Rim.....	.90"
38 Colt New Police.....	.77"	45-70.....	2.10"
38 Short Colt.....	.69"	45-90.....	2.40"
		50-110.....	2.41"

Table of Full Power Charges For Rifles

The following tables of suggested charges for rifles, revolvers and pistols have been compiled from various sources of information which we believe to be reliable. We believe the handloader will find them of assistance when developing the powder charge. They should be safe to use in all arms in good mechanical condition when used in conjunction with cartridge components of similar quality. However, having no control over the condition of the arms in which they may be used, the methods of loading or selection of cartridge components, we assume no responsibility for their use.

Do not use this table until you have read the Sections of this Handbook entitled "Gun-powders" (Page 30), "How to Develop the Powder Charge" (Page 35), and "Indications of Excessive Pressures" (Page 35).

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
22 HORNET				
J	35	2400	7.0	1900
J	35	2400	9.5	2540
J	35	2400	11.5	3020
J	35	4227	10.0	2750
J	40	2400	7.0	1870
J	40	2400	9.5	2460
J	40	2400	11.2	2860
Lead GC	43	2400	7.5	1910
Lead GC	43	4759	7.6	1910
J	45	2400	6.0	1665
J	45	2400	9.0	2400
J	45	4227	8.5	2040
J	45	4227	10.8	2410
Lead	46	Unique	4.5	1500
J	55	2400	6.0	1580
J	55	2400	7.5	1965
J	55	2400	9.3	2340

22 K-HORNET

J	40	4227	13.0	3030
J	40	4227	13.5	3040
J	40	4227	14.0	3210
J	40	2400	11.0	3080
J	40	2400	12.0	3200
J	45	2400	11.0	3000
J	45	4227	13.0	2950
J	46	2400	11.0	2980
J	50	4227	11.0	2460
J	50	4227	11.5	2590
J	50	4227	12.0	2650
J	50	4227	12.5	2700

219 DONALDSON WASP

Lead	43	2400	10.0	2100
J	45	4198	25.0	....
J	45	3031	28.0	3700
J	45	4320	29.0	3450
J	45	4320	31.0	3580
J	45	4064	27.0	....
J	45	4759	20.0	2970
J	50	4198	24.0	....
J	50	3031	27.0	3650
J	50	4320	31.0	3620
J	50	4064	26.0	....
J	55	4198	23.0	....
J	55	3031	28.5	3611
J	55	3031	26.0	3200
J	55	4320	27.0	3025
J	55	4320	28.5	3250
J	55	4064	25.0	....

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
.222 REMINGTON				
Lead	43	Unique	4.0	1300
Lead	43	4759	9.0	1850
J	45	4198	20.0	2998
J	45	4198	20.5	3095
J	45	4198	21.0	3229
J	45	4198	21.5	3295
J	45	4227	18.0	3252
J	50	4759	14.0	2680
J	50	4198	19.5	2872
J	50	4198	20.0	2956
J	50	4198	20.5	3055
J	50	4198	21.0	3139
J	50	4227	15.0	2695
J	50	4227	16.5	2836
J	55	4198	19.0	2857
J	55	4198	19.5	2950
J	55	4198	20.0	3009
J	55	4198	21.0	3165
J	55	4227	15.5	2683
J	55	4227	16.5	2786
Lead GC	55	4227	11.0	2100
Lead GC	55	4759	9.8	2100
Lead GC	55	4198	14.0	....
J	55	HiVel 2	20.0	3200
J	63	4198	18.0	....
218 BEE				
J	41	4227	14.5	2963
Lead GC	43	Unique	4.5	1500
J	45	2400	10.0	2328
J	45	2400	11.0	2554
J	45	2400	12.0	2800
J	45	4227	11.5	2413
J	45	4227	12.8	2790
Lead GC	48	2400	9.5	1700
J	50	4227	10.8	2277
J	50	4227	11.0	2328
J	50	2400	8.0	1945
J	50	2400	8.5	2005
J	50	2400	9.0	2149
J	50	2400	9.5	2244
J	50	2400	10.0	2310
J	50	2400	11.8	2725
J	50	4227	12.4	2675
J	50	4198	15.0	2600
J	55	4198	14.0	2474
22-250 VARMINTER				
J	40	4759	29.0	3993
J	40	4320	40.0	4440
J	40	4320	41.0	4490
Lead	43	4227	10.0	2000
J	45	4759	22.5	3320
J	45	4759	25.0	3610
J	45	4759	29.0	3750
J	46	4227	8.5	1790

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
22-250 VARMINTER <i>Continued</i>				
J	46	4227	10.0	1980
J	46	4227	12.5	2260
J	48	4320	40.0	4180
J	50	4759	10.0	1830
J	50	4759	15.0	2412
J	50	4759	18.0	2675
J	50	4759	20.0	2820
J	50	4759	22.5	3245
J	50	4198	15.0	2290
J	50	4198	18.0	2550
J	50	4198	22.0	3140
J	50	3031	22.5	3040
J	50	3031	27.5	3210
J	50	3031	35.0	3880
J	50	4320	35.0	3620
J	50	4320	36.0	3760
J	50	4320	37.0	3780
J	50	4320	39.0	4070
J	50	4320	40.0	4140
J	55	4759	18.0	2651
J	55	4320	35.0	3590
J	55	4320	36.0	3700
J	55	4320	37.0	3740
J	55	4350	39.5	3740
J	63	4064	37.0	3500
J	63	4350	39.0	3580

22-3000 LOVELL

Lead GK	43	Unique	4.5	1500
Lead GK	46	Unique	4.5	1450
J	35	2400	14.0	3300
J	40	2400	14.0	3100
J	45	4198	15.8	3100
J	45	4227	15.8	3100
J	50	4198	15.0	3000
J	50	4227	15.0	3000
J	55	4227	14.0	2800
Lead GK	45	4759	7.0	1800
J	45	4759	8.0	1900

R-2 DONALDSON OR R-2 LOVELL

Lead GK	48	Unique	4.5	1500
Lead GK	48	2400	4.5	1500
Lead GK	46	Unique	5.5	1700
Lead GK	46	2400	6.0	1500
Lead GK	43	4759	8.0	1900
J	45	4759	12.0	2500
J	40	4227	16.0	3400
J	45	4227	17.0	3300
J	50	4227	17.0	3200
J	50	4198	17.0	3200
J	55	4227	16.5	3050
J	50	4198	16.0	2950
Lead GK	47.5	4227	11.0	2490

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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219 ZIPPER

J J Lead J J J J J J J J J J J J J J J J J J J	40	4198	25.5	3500
	40	3031	29.5	3500
	43	2400	10.0	1900
	45	4759	12.0	2260
	45	4759	16.0	2820
	45	4759	18.0	3026
	45	4759	20.0	3345
	46	3031	28.0	3231
	46	4064	29.0	3070
	50	4759	16.0	2655
	50	4759	21.0	3425
	50	4198	22.5	3200
	50	3031	28.0	3300
	55	4759	16.0	2852
	55	3031	26.5	3240
	55	4064	27.0	2990
	55	4320	27.5	3030
	56	3031	25.5	2930
	56	4064	26.5	2800

220 SWIFT

J J	48	3031	34.0	3500
	48	3031	38.0	3885
	48	4320	35.0	3500
	48	4320	38.8	3900
	48	4064	37.0	3600
	48	4064	40.6	4025
	48	HiVel 2	20.0	2225
	48	HiVel 2	34.8	3785
	48	Unique	10.0	2240
	48	Unique	13.0	2800
	50	4350	42.0	3900
	50	4759	18.0	2720
	55	4759	16.0	2330
	55	4759	18.0	2535
	55	4759	25.0	3235
	55	3031	32.0	3310
	55	3031	36.5	3635
	55	4320	33.5	3275
	55	4320	37.5	3575
	55	4064	34.7	3360
	55	4064	38.5	3685
	55	4350	42.0	3600
	55	HiVel 2	34.0	3500
	65	4350	40.0	3550

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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22 SAVAGE HI-POWER

Lead	50	Unique	7.5	1932
Lead	60	Unique	6.5	1650
	70	HiVel 2	10.0	1140
	70	HiVel 2	25.4	2970
	70	2400	8.0	1500
	70	2400	17.6	2670
	70	Unique	7.0	1550
	70	Unique	10.7	2190
	70	4198	15.0	1890
	70	4198	21.0	2605
	70	3031	21.0	2275
	70	3031	27.0	2800
	70	4320	24.0	2350
	70	4320	30.0	2830
	70	4895	28.0	2923
	70	4350	31.0	2818

244 REMINGTON

	70	3031	35.0	3250
	70	3031	39.0	3550
	70	3031	42.0	3700
	70	4064	38.0	3250
	70	4064	42.0	3550
	70	4064	45.0	3800
	70	4320	40.0	3300
	70	4320	44.0	3550
	70	4320	47.0	3850
	70	4350	44.0	3225
	70	4350	47.0	3450
	70	4350	49.0	3550
	75	4350	44.0	2600
	75	4320	39.0	3275
	75	4064	38.0	3300
	75	3031	36.0	3250
	85	3031	36.0	3150
	85	3031	39.0	3350
	85	3031	41.0	3450
	85	4064	39.0	3125
	85	4064	41.0	3300
	85	4064	43.0	3450
	85	4320	40.0	3100
	85	4320	44.0	3450
	85	4350	43.0	3050
	85	4350	48.0	3400
	90	4350	43.0	3125
	90	4064	36.0	3025
	90	4320	38.0	3100
	90	3031	34.0	2975
	100	3031	32.0	2850
	100	3031	35.0	3000
	100	3031	38.0	3125
	100	4064	36.0	2800
	100	4064	40.0	3100

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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244 REMINGTON *Continued*

J	100	4320	38.0	2900
J	100	4320	41.0	3125
J	100	4350	41.0	2850
J	100	4350	45.0	3100
J	105	4350	38.0	2700
J	105	4064	33.0	2600

243 WINCHESTER

J	70	3031	34.0	3250
J	70	3031	37.0	3450
J	70	3031	41.0	3700
J	70	4064	37.0	3300
J	70	4064	40.0	3550
J	70	4064	43.0	3800
J	70	4320	39.0	3300
J	70	4320	43.0	3550
J	70	4320	46.0	3800
J	70	4350	43.0	3250
J	70	4350	45.0	3400
J	70	4350	47.0	3550
J	75	3031	38.0	3425
J	75	4350	46.0	3415
J	75	HiVel 2	37.0	3300
J	75	4350	46.5	3500
J	80	4320	41.0	3325
J	80	4350	45.0	3350
J	85	3031	34.0	3050
J	85	3031	37.0	3250
J	85	3031	40.0	3450
J	85	4064	38.0	3100
J	85	4064	40.0	3250
J	85	4064	42.0	3400
J	85	4320	39.0	3150
J	85	4320	43.0	3450
J	85	4350	42.0	3100
J	85	4350	46.0	3400
J	87	4064	38.0	3125
J	87	4350	43.0	3150
J	90	4350	44.0	3225
J	100	3031	31.0	2850
J	100	3031	34.0	3000
J	100	3031	37.0	3100
J	100	4064	35.0	2800
J	100	4064	39.0	3100
J	100	4320	37.0	2850
J	100	4320	40.0	3100
J	100	4350	39.0	2850
J	100	4350	44.0	3200
J	105	4350	40.0	2875

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
25-20 SINGLE SHOT				
J	60	2400	8.0	1535
J	60	2400	9.5	1815
J	86	2400	7.0	1130
J	86	2400	8.8	1520
J	86	4227	8.5	1400
Lead	86	2400	7.0	1450
Lead	86	2400	9.0	1705
25-20 REPEATER				
J	60	2400	7.5	1450
J	60	2400	9.0	1765
J	60	2400	10.5	2075
J	60	4227	9.7	1785
J	60	4227	12.7	2195
J	60	Unique	5.5	1795
Lead	62	Unique	4.0	1475
Lead	62	Unique	5.4	1835
Lead GC	65	4759	9.0	1560
Lead GC	75	4759	10.0	1770
Lead	85	Unique	4.8	1485
J	86	4227	8.7	1410
J	86	4227	10.7	1745
J	86	2400	6.5	1030
J	86	2400	8.0	1475
J	86	2400	9.5	1740
J	86	4759	10.0	1620
25 REMINGTON RIMLESS				
J	60	HiVel 2	18.0	1850
J	60	HiVel 2	31.8	3220
J	60	2400	12.0	1940
J	60	2400	20.9	3040
J	60	Unique	9.0	2020
J	60	Unique	12.9	2565
Lead	84	Unique	5.0	1245
J	87	HiVel 2	14.0	1360
J	87	HiVel 2	30.3	2870
J	87	Unique	12.0	2080
J	87	2400	10.0	1530
J	87	2400	19.4	2490
J	87	4198	20.0	2325
J	87	4198	23.5	2580
J	87	3031	26.0	2425
J	87	3031	31.5	2755
J	100	HiVel 2	12.0	1270
J	100	HiVel 2	28.1	2630
J	100	2400	10.0	1245
J	100	2400	18.7	2255
J	100	Unique	8.0	1400
J	117	HiVel 2	10.0	1010
J	117	HiVel 2	26.4	2420
J	117	2400	12.0	1420
J	117	2400	18.3	2085
J	117	Unique	7.0	970
J	117	Unique	10.6	1575
J	117	4198	17.0	1800
J	117	4198	22.0	2215
J	117	3031	21.5	1900
J	117	3031	26.0	2225

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
257 ROBERTS				
J	60	3031	41.0	3566
J	60	3031	44.0	3790
J	60	4350	43.5	.....
Lead GC	75	4759	15.0	1920
Lead GC	75	Unique	7.0	....
Lead GC	75	2400	12.0	....
J	87	HiVel 2	26.0	2220
J	87	HiVel 2	33.0	2800
J	87	HiVel 2	39.0	3295
J	87	2400	16.0	2025
J	87	2400	22.9	2600
J	87	4350	48.0	3367
J	87	4198	29.0	2725
J	87	4198	33.5	3020
J	87	3031	36.0	2820
J	87	3031	40.5	3200
J	87	4320	38.5	2820
J	87	4320	43.5	3200
J	87	4064	39.0	2860
J	87	4064	43.5	3250
Lead GC	90	4759	15.0	1880
Lead GC	90	4759	17.0	2250
Lead GC	97	4198	19.0	....
Lead GC	97	4759	14.6	....
Lead GC	97	2400	12.0	....
J	100	HiVel 2	24.0	2100
J	100	HiVel 2	37.0	3070
J	100	HiVel 2	32.0	2700
J	100	2400	22.6	2410
J	100	4350	46.0	3000
J	100	4895	39.0	3028
				(Lot 27277)
J	100	4198	28.0	2530
J	100	4198	32.0	2785
J	100	3031	34.0	2625
J	100	3031	38.5	2920
J	100	4320	35.5	2635
J	100	4320	41.0	2950
J	100	4064	36.0	2680
J	100	4064	41.0	2995
Lead GC	100	4759	13.0	1550
J	117	HiVel 2	23.0	1980
J	117	HiVel 2	36.8	2870
J	117	HiVel 2	31.0	2460
J	117	2400	22.0	2220
J	117	4350	45.0	2950
J	117	4198	26.0	2280
J	117	4198	31.0	2580
J	117	3031	31.5	2400
J	117	3031	36.0	2660
J	117	4320	33.5	2415
J	117	4320	38.0	2675
J	117	4064	34.0	2455
J	117	4064	38.0	2705
J	125	4350	44.0	2800

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
25-35 WINCHESTER				
J	60	HiVel 2	15.0	1570
J	60	HiVel 2	26.0	2840
J	60	2400	12.0	1870
J	60	2400	20.1	2880
Lead	84	Unique	9.0	1750
Lead	85	Unique	7.0	1660
J	86	2400	15.6	2218
J	87	HiVel 2	15.0	1500
J	87	HiVel 2	24.5	2450
J	87	2400	12.0	1720
J	87	2400	16.5	2240
J	87	Unique	6.0	1190
J	87	Unique	9.0	1780
J	87	4198	19.0	2260
J	87	4198	21.5	2560
J	87	3031	25.0	2310
J	87	3031	30.0	2795
J	87	4320	27.0	2370
J	87	4320	32.0	2730
J	100	4198	18.0	2110
J	100	4198	21.0	2365
J	100	3031	23.0	2060
J	100	3031	27.0	2450
J	100	4320	24.0	2100
J	100	4320	29.0	2465
J	117	HiVel 2	12.0	1200
J	117	HiVel 2	22.1	2100
J	117	2400	10.0	1250
J	117	2400	15.0	1840
J	117	Unique	7.0	1000
J	117	Unique	8.0	1150
J	117	4198	17.5	1930
J	117	4198	20.5	2210
J	117	3031	21.0	1930
J	117	3031	26.5	2350
J	117	4064	23.0	1950
J	117	4064	28.0	2295

250 SAVAGE, BOLT ACTION

J	60	HiVel 2	18.0	1900
J	60	HiVel 2	26.0	2650
J	60	HiVel 2	33.6	3360
J	60	2400	14.0	2205
J	60	2400	22.3	3145
J	60	Unique	10.0	2205
J	60	Unique	14.0	2695
J	60	3031	37.0	3482
Lead	77	2400	11.0	....
Lead	84	Unique	9.0	1750
J	86	Unique	5.3	1040
J	86	Unique	10.0	1758
J	87	HiVel 2	13.0	1340
J	87	HiVel 2	26.0	2405
J	87	HiVel 2	33.0	2995
J	87	2400	11.0	1710

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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250 SAVAGE, BOLT ACTION *Continued*

J	87	2400	20.5	2565
J	87	Unique	6.8	1377
J	87	4350	40.5	3005
J	87	4198	24.0	2500
J	87	4198	29.5	2970
J	87	3031	29.0	2600
J	87	3031	36.5	3110
J	87	4320	32.0	2535
J	87	4320	38.0	3030
J	87	4064	32.0	2600
J	87	4064	38.0	3095
Lead GC	90	4759	10.0	1260
Lead GC	90	4759	13.0	1700
Lead GC	97	4198	18.0	....
Lead GC	97	4759	13.5	....
J	100	HiVel 2	13.0	1310
J	100	HiVel 2	23.0	2130
J	100	HiVel 2	29.4	2670
J	100	2400	9.0	1260
J	100	2400	19.8	2295
J	100	Unique	12.6	1835
J	100	4895	34.5	2801
				(Lot 27277)
J	100	4350	39.0	2747
J	100	4198	23.0	2300
J	100	4198	28.5	2720
J	100	3031	28.0	2420
J	100	3031	34.0	2830
J	100	4320	30.0	2425
J	100	4320	36.0	2820
J	100	4064	30.0	2360
J	100	4064	36.5	2885
J	117	HiVel 2	13.0	1200
J	117	HiVel 2	22.0	1935
J	117	HiVel 2	28.2	2450
J	117	2400	10.0	1150
J	117	2400	19.1	2040
J	117	Unique	12.0	1560

6 mm U. S. NAVY

J	112	HiVel 2	32.6	2710
J	112	4064	27.0	2200
J	112	4064	32.5	2540

6.5 mm JAP

Lead	100	4759	13.0	1490
Lead	100	4198	17.0	1710
Lead	145	4198	20.0	1600
Lead	145	4198	25.0	1850
J	120	HiVel 2	31.0	2500
J	120	4064	36.0	2800

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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6.5 mm MANNLICHER SCHOENAUER

J	129	3031	32.5	2270
J	129	3031	37.5	2580
J	129	4064	35.0	2290
J	129	4064	40.5	2600
J	140	3031	31.0	2140
J	140	3031	36.0	2450
J	140	4064	33.5	2160
J	140	4064	39.0	2480
J	160	3031	29.0	1960
J	160	3031	33.5	2220
J	160	4064	32.0	1990
J	160	4064	37.0	2260

256 NEWTON

J	125	4064	45.5	....
J	100	4320	48.0	....
J	100	4064	46.0	3090
J	123	4064	43.0	2875
J	129	4320	44.0	....
J	129	4064	43.0	2800
J	129	4064	44.0	2875
J	129	HiVel 2	44.0	2950
J	130	4350	53.0	....
J	160	4350	42.0	....

270 WINCHESTER

J	100 or 110	3031	42.0	2930
J	100 or 110	3031	50.0	3250
J	100 or 110	4320	54.0	3280
J	100 or 110	4064	50.0	3250
J	100 or 110	HiVel 2	43.8	3180
Lead GC	104	4759	16.0	1767
Lead GC	107	4198	19.0	....
Lead GC	107	4759	14.6	....
Lead GC	107	2400	13.0	....
Lead	111	Unique	8.0	1402
Lead	125	Unique	10.0	1460
Lead GC	125	3031	23.5	....
Lead GC	125	4198	20.0	....
Lead GC	125	4759	14.8	....
J	130	3031	37.0	2545
J	130	3031	48.0	3051
J	130	4320	42.0	2645
J	130	4320	52.0	3110
J	130	4064	40.0	2565
J	130	4064	49.5	3090
J	130	HiVel 2	25.0	1640
J	130	HiVel 2	36.0	2310
J	130	HiVel 2	44.0	2800
J	130	2400	17.0	1500
J	130	2400	31.2	2460

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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270 WINCHESTER *Continued*

J	130	Unique	13.0	1470
J	130	Unique	19.8	2005
J	130	4350	57.0	3141
J	130	4895	50.0	3075
				(Lot 27277)
J	150	HiVel 2	25.0	1535
J	150	4350	53.5	2909
J	150	HiVel 2	45.4	2690
J	160	4350	53.0	2800
J	170	4350	50.0	2550
J	170	4320	44.0	2475
J	170	4064	43.0	2425
J	170	HiVel	40.0	2450

7 mm MAUSER

J	120	4064	46.0	3000
J	120	3031	42.5	2900
J	130	4320	44.0	2800
J	130	3031	40.5	2750
Lead	138	Unique	16.0	1945
J	139	HiVel 2	20.0	1480
J	139	HiVel 2	31.0	2160
J	139	HiVel 2	42.0	2840
J	139	2400	10.0	1175
J	139	2400	28.4	2500
J	139	Unique	16.9	1860
J	139	3031	37.0	2590
J	139	3031	42.5	2920
J	139	4320	39.0	2600
J	139	4320	46.0	3015
J	139	4064	40.0	2625
J	139	4064	46.0	3000
Lead	140	Unique	9.0	1440
J	145	4320	45.5	2802
J	145	4350	47.0	2950
J	145	3031	42.0	2820
J	154	4350	47.0	2575
J	154	4064	40.5	2525
J	160	4350	48.0	2636
J	150	HiVel 2	41.2	2780
J	175	HiVel 2	18.0	1320
J	175	HiVel 2	39.8	2540
J	175	Unique	16.5	1660
J	175	3031	33.0	2210
J	175	3031	40.0	2530
J	175	4320	35.0	2230
J	175	4320	42.0	2580
J	175	4064	36.0	2255
J	175	4064	42.0	2575
J	175	4350	47.0	2591

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
7.35 mm CARCANO				
J	150	4198	31.0	2395
J	150	4198	33.0	2480
J	150	4198	35.0	2550
J	150	3031	36.0	2325
J	150	3031	38.0	2450
J	150	3031	40.0	2525
J	150	4064	37.0	2275
J	150	4064	39.0	2375
J	150	4064	41.0	2500
J	150	HiVel	35.0	2275
J	150	HiVel	37.0	2400
J	150	HiVel	39.0	2525
30 REMINGTON				
J	110	4198	21.0	1980
J	110	4198	25.0	2350
J	110	3031	32.0	2320
J	110	3031	36.5	2550
J	160	4198	18.0	1550
J	160	4198	22.5	1965
J	160	3031	24.0	1765
J	160	3031	30.5	2140
J	170	4198	18.0	1595
J	170	4198	22.0	1895
J	170	3031	23.0	1660
J	170	3031	30.0	2070
30 WINCHESTER (30-30)				
J	110	HiVel 2	19.2	1525
J	110	HiVel 2	32.0	2760
J	110	2400	12.0	1520
J	110	2400	21.3	2435
J	110	Unique	10.0	1735
J	110	Unique	13.4	2085
J	110	4198	24.0	2185
J	110	4198	32.5	2745
J	110	3031	30.0	2190
J	110	3031	37.0	2630
Lead	115	Unique	11.0	1825
J	150	HiVel 2	20.0	1450
J	150	HiVel 2	30.9	2300
J	150	2400	14.0	1495
J	150	2400	24.2	2250
J	150	Unique	9.0	1360
J	150	Unique	11.9	1685
Lead	150	Unique	10.0	1615
J	150	4198	23.0	2000
J	150	4198	27.0	2305
J	150	3031	29.0	2090
J	150	3031	35.0	2500
Lead GC	160	4759	13.0	1450
Lead GC	160	4759	15.0	1605
Lead	168	Unique	9.0	1390
Lead GC	169	Unique	8.0	1320
Lead GC	169	Unique	10.9	1600
J	170	4198	21.0	1835

Bullet	Gr. Weight	Powder Kind	Charge Grs.	Velocity
30 WINCHESTER (30-30) Continued				
J	170	4198	26.0	2160
J	170	3031	28.0	1945
J	170	3031	33.5	2300
J	170	HiVel 2	17.5	1290
J	170	HiVel 2	30.0	2175
J	170	2400	11.0	1200
J	170	2400	22.9	2105
J	170	Unique	8.0	1185
J	170	Unique	11.2	1485

300 SAVAGE

J	110	4198	29.5	2365
J	110	4198	40.0	3045
J	110	3031	40.0	2585
J	110	3031	45.0	2915
J	110	HiVel 2	42.8	3120
J	130	4320	44.0	2700
J	130	3031	40.0	2700
J	130	4064	43.0	2650
J	130	HiVel 2	40.0	2700
J	150	HiVel 2	20.0	1395
J	150	HiVel 2	30.0	2080
J	150	HiVel 2	39.2	2710
J	150	2400	13.0	1390
J	150	2400	27.8	2450
J	150	Unique	11.0	1475
J	150	Unique	16.0	1900
J	150	4198	28.0	2150
J	150	4198	35.5	2600
J	150	3031	37.0	2290
J	150	3031	41.0	2565
J	170	Unique	11.0	1455
J	170	Unique	15.1	1755
J	180	HiVel 2	15.0	1060
J	180	HiVel 2	26.0	1780
J	180	HiVel 2	36.0	2430
J	180	4198	27.0	2075
J	180	4198	34.0	2375
J	180	3031	34.0	2100
J	180	3031	40.0	2450

300 H & H MAGNUM

J	110	HiVel 2	56.0	3035
J	110	HiVel 2	58.0	3600
J	110	4064	55.0	3035
J	110	4064	67.5	3600
J	125	3031	60.0	3300
J	125	3031	62.0	3500
J	130	4350	71.0	3250
J	130	4320	63.0	3300
J	130	4064	62.0	3300
J	150	4350	66.0	3250
J	150	4064	47.5	2530
J	150	4064	59.5	3060
J	150	4350	63.0	3000

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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300 H & H MAGNUM *Continued*

Lead	153	Unique	21.0	2070
Lead	153	4759	23.0	1800
J	173	4064	47.5	2530
J	173	4064	59.5	3060
J	173	4350	65.0	3150
J	180	HiVel 2	56.5	2854
J	180	4350	67.0	2931
J	180	4064	45.0	2485
J	180	4064	57.5	3000
Lead	180	4759	25.0	1700
Lead	180	HiVel 2	35.0	1800
J	200	4350	65.0	2760
Lead	207	HiVel 2	39.0	2000
J	220	4350	65.0	2639
J	220	4064	44.5	2215
J	220	4064	55.6	2635
J	220	HiVel 2	55.0	2575
J	220	HiVel 2	56.0	2625
J	220	4350	65.0	2639

308 WINCHESTER

J	93	3031	49.0	3350
J	110	4198	41.0	3100
J	110	3031	48.0	3175
J	110	HiVel 2	45.0	3100
J	110	2400	26.5	2600
J	110	4064	50.5	3050
J	110	4064	52.0	3150
J	125	4198	40.0	3025
J	125	3031	46.0	3025
J	125	4320	50.0	3000
J	130	4320	51.0	3025
J	130	4064	49.0	2975
J	130	3031	44.0	2900
J	130	HiVel	46.0	3075
J	150	HiVel 2	40.0	2600
J	150	4064	48.5	2825
J	150	4064	49.0	2850
J	150	3031	44.5	2800
J	150	4198	37.0	2600
J	150	4320	46.5	2750
J	150	HiVel 2	33.5	2175
J	150	HiVel 2	41.5	2700
J	180	HiVel 2	38.5	2475
J	180	4320	43.0	2450
J	180	3031	40.0	2450
J	180	4350	51.5	2625
J	180	HiVel 2	34.0	2200
J	180	HiVel 2	40.0	2550
J	180	4198	35.0	2350

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
30-06 SPRINGFIELD				
J	80	HiVel 2	36.0	2440
J	80	HiVel 2	50.5	3400
J	80	2400	24.0	2595
J	80	2400	31.6	3110
J	80	Unique	21.4	2860
J	93	4320	57.5	3268
J	110	Unique	15.0	1960
J	110	Unique	19.8	2320
J	110	4759	30.0	2372
J	110	HiVel 2	35.0	2315
J	110	HiVel 2	42.0	2735
J	110	HiVel 2	49.8	3280
J	110	2400	22.0	2160
J	110	2400	29.0	2600
J	110	4198	27.0	2330
J	110	4198	41.5	3150
J	110	3031	44.0	2750
J	110	3031	53.5	3310
J	110	4320	48.0	2900
J	110	4320	56.5	3345
J	110	4064	45.0	2745
J	110	4064	55.0	3285
J	125	4350	57.0	3000
J	125	3031	50.0	3100
J	125	HiVel 2	48.5	3150
J	125	4320	55.0	3150
J	130	4320	55.0	3125
J	130	3031	52.0	3150
J	130	HiVel 2	53.0	3100
J	150	HiVel 2	32.0	1995
J	150	HiVel 2	42.0	2610
J	150	HiVel 2	48.6	2980
J	150	2400	22.0	1940
J	150	2400	27.2	2270
J	150	Unique	14.0	1640
J	150	Unique	19.5	2010
Lead GC	150	4759	12.0	1110
J	150	4350	57.0	.....
J	150	4198	24.0	1985
J	150	4198	39.0	2820
J	150	3031	41.0	2500
J	150	3031	50.0	3060
J	150	4320	45.0	2600
J	150	4320	53.5	3080
J	150	4064	43.0	2525
J	150	4064	53.0	3070
Lead GC	153	4198	22.8	.....
Lead GC	153	3031	27.0	.....
Lead GC	153	4759	18.0	.....
Lead GC	153	4227	19.0	.....
Lead GC	153	2400	19.0	.....
J	160	4759	25.0	1868
Lead GC	169	4759	15.0	1252
Lead GC	169	4759	18.0	1432
Lead GC	169	Unique	12.0	1500

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
30-06 SPRINGFIELD <i>Continued</i>				
Lead GC	169	Unique	17.8	1890
J	170	HiVel 2	30.0	1850
J	170	HiVel 2	40.0	2420
J	170	HiVel 2	46.0	2720
J	170	2400	20.0	1700
J	170	2400	27.0	2075
J	170	Unique	14.0	1490
J	170	Unique	18.5	1765
J	173	HiVel 2	30.0	1870
J	173	HiVel 2	35.4	2200
J	173	HiVel 2	45.8	2760
J	173	2400	20.0	1660
J	173	2400	27.3	2120
J	173	4350	56.0	2800
J	173	4895	50.0	2795
				(Lot 27277)
J	173	4198	22.0	1830
J	173	4198	35.5	2615
J	173	3031	36.0	2340
J	173	3031	44.5	2800
J	173	4320	41.0	2480
J	173	4320	47.0	2860
J	173	4064	39.0	2415
J	173	4064	47.0	2820
J	180	HiVel 2	30.0	1825
J	180	HiVel 2	40.0	2400
J	180	HiVel 2	46.2	2755
J	180	2400	18.0	1620
J	180	2400	26.3	2130
J	180	Unique	18.4	1840
J	180	4350	56.0	2730
J	180	4198	22.0	1760
J	180	4198	35.0	2505
J	180	3031	36.0	2275
J	180	3031	44.0	2685
J	180	4320	41.0	2415
J	180	4320	46.5	2790
J	180	4064	39.0	2350
J	180	4064	46.5	2750
Lead GC	180	4198	24.1	....
J	200	HiVel 2	24.0	1400
J	200	4350	52.0	2500
J	200	4350	54.0	2600
Lead	193	Unique	12.0	1355
J	200	HiVel 2	36.0	2075
J	200	HiVel 2	45.0	2520
J	220	HiVel 2	28.0	1575
J	220	HiVel 2	38.0	2140
J	220	HiVel 2	43.6	2430
J	220	2400	18.0	1320
J	220	2400	25.8	1800
J	220	4350	56.0	2595
J	220	4320	39.0	2115
J	220	4320	45.0	2425
J	220	4064	38.0	2100
J	220	4064	45.0	2400

Bullet	Gr. Weight	Powder Kind	Charge Gr.	Velocity
30-40 Krag				
Lead	80	HiVel 2	25.0	1890
	80	HiVel 2	43.2	3310
	80	2400	20.0	2240
	80	2400	33.6	3350
	80	Unique	13.0	2215
	80	Unique	18.4	2705
	98	Unique	8.0	1580
	110	HiVel 2	23.0	1770
	110	HiVel 2	41.1	3040
	110	2400	15.0	1770
	110	2400	26.5	2640
	110	Unique	16.4	2205
	110	4198	28.0	2370
	110	4198	37.0	2885
	110	3031	37.0	2050
	110	3031	45.5	2715
	115	4350	49.2	2681
	125	HiVel 2	39.5	2569
	150	HiVel 2	15.0	1080
	150	HiVel 2	38.2	2680
	150	2400	14.0	1400
	150	2400	26.0	2320
	150	Unique	12.0	1565
	150	Unique	15.8	1860
Lead GC	150	4759	15.0	1545
	150	4198	25.0	2050
	150	4198	30.0	2365
	150	3031	35.0	1880
	150	3031	42.0	2665
	150	4320	36.0	2365
	150	4320	44.0	2680
	150	4064	40.0	2405
	150	4064	46.0	2770
	169	Unique	11.0	1520
Lead GC	169	Unique	14.8	1815
	170	Unique	12.4	1550
	173	HiVel 2	25.0	1720
	173	HiVel 2	36.2	2460
	173	2400	12.0	1190
	173	2400	25.2	2130
	173	4198	24.0	1915
	173	4198	27.5	2130
	173	3031	32.0	2045
	173	3031	38.5	2470
	173	4320	32.0	2005
	173	4320	40.0	2420
	173	4064	34.0	2110
	173	4064	42.0	2565
	180	HiVel 2	22.0	1560
	180	HiVel 2	36.0	2450
	180	Unique	13.0	1560
	180	4198	24.0	1895
	180	4198	27.0	2060
	180	3031	32.0	2040
	180	3031	36.5	2345

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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30-40 Krag Continued

J	180	4320	32.0	2000
J	180	4320	38.5	2350
J	180	4064	34.0	2100
J	180	4064	40.0	2425
J	190	Unique	11.9	1350
J	190	4350	45.0	2300
Lead	193	Unique	11.0	1410
Lead GC	207	4759	22.0	1815
J	220	HiVel 2	18.0	1190
J	220	HiVel 2	34.5	2130
J	220	Unique	14.0	1315
J	220	4198	24.0	1765
J	220	4198	26.7	1875
J	220	3031	31.0	1850
J	220	3031	36.2	2090
J	220	4320	31.0	1815
J	220	4320	38.2	2150
J	220	4064	33.0	1900
J	220	4064	39.7	2200

7.62 mm RUSSIAN

J	110	3031	46.0	2900
J	110	3031	51.0	3200
J	110	4320	48.0	2860
J	110	4320	56.0	3285
J	110	4064	52.0	3000
J	150	3031	45.0	2735
J	150	3031	50.0	3035
J	150	4320	47.0	2705
J	150	4320	53.0	3085
J	150	4064	47.0	2715
J	150	4064	51.0	2955
J	150	HiVel 2	28.0	1820
J	150	HiVel 2	43.6	2720
J	150	Unique	12.0	1560
J	150	Unique	16.0	1900
Lead GG	169	Unique	11.0	1430
Lead GC	169	Unique	15.4	1730
J	173	3031	40.0	2425
J	173	3031	45.5	2750
J	173	4320	41.0	2400
J	173	4320	48.5	2800
J	173	4064	42.0	2445
J	173	4064	48.0	2695
J	220	3031	36.0	2055
J	220	3031	41.5	2300
J	220	4320	37.0	2085
J	220	4320	44.0	2360
J	220	4064	39.0	2100
J	220	4064	45.0	2380

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
303 SAVAGE				
J	190	4198	20.0	1498
J	190	4198	27.5	2000
J	190	3031	30.0	1840
J	190	3031	33.5	2090
J	190	4320	32.0	1850
J	190	4320	36.5	2145
J	190	HiVel 2	16.0	1070
J	190	HiVel 2	30.1	2080
J	190	2400	10.0	910
J	190	2400	19.5	1820
J	190	Unique	8.0	1012
J	190	Unique	11.3	1390

303 BRITISH				
J	125	HiVel 2	42.0	2602
J	130	3031	46.5	3000
J	130	4320	50.5	2975
J	150	3031	44.0	2775
J	150	4320	48.5	2800
J	180	3031	42.0	2525
J	180	4064	44.5	2550
J	174	HiVel 2	14.0	880
J	174	HiVel 2	32.7	2200
J	174	2400	13.0	1140
J	174	2400	21.3	1870
J	174	3031	37.0	2200
J	174	3031	42.0	2510
J	174	4320	39.0	2155
J	174	4320	45.0	2515
J	174	4064	38.0	2100
J	174	4064	43.0	2400
J	215	HiVel 2	12.0	760
J	215	HiVel 2	30.8	1950
J	215	2400	12.0	1020
J	215	2400	20.3	1610
Lead	215	Unique	13.0	1500
J	215	3031	36.0	2070
J	215	3031	40.0	2265
J	215	4320	38.0	2050
J	215	4320	43.5	2340
J	215	4064	38.5	2065
J	215	4064	42.5	2275
J	215	4350	46.0	2290

32 REMINGTON RIMLESS				
J	110	4198	26.0	2285
J	110	4198	34.0	2730
J	110	3031	33.0	2245
J	110	3031	38.0	2500
J	170	4198	21.0	1800
J	170	4198	27.0	2130
J	170	3031	29.0	1930
J	170	3031	34.0	2220

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
32 WINCHESTER SPECIAL				
J	110	4198	29.0	2400
J	110	4198	36.0	2825
J	110	3031	32.0	2090
J	110	3031	37.0	2375
J	110	4320	35.0	2185
J	110	4320	40.0	2415
J	110	HiVel 2	22.0	1520
J	110	HiVel 2	35.4	2565
J	110	2400	13.0	1500
J	110	2400	20.0	2260
Lead GC	125	4759	13.0	1510
J	165	HiVel 2	31.4	2140
J	165	2400	18.7	1810
J	165	Unique	12.0	1580
J	170	4198	23.0	1870
J	170	4198	30.0	2260
J	170	3031	28.0	1860
J	170	3031	33.5	2230
J	170	4320	32.0	1915
J	170	4320	36.5	2180
J	170	HiVel 2	18.0	1180
J	170	HiVel 2	32.0	2160
J	170	2400	10.0	1000
J	170	2400	18.7	1825
J	170	Unique	11.0	1425
J	170	4759	13.0	1605

32 WINCHESTER (32-20) RIFLE

J	80	2400	8.0	1020
J	80	2400	13.0	1845
J	80	Unique	5.5	1540
J	80	Unique	6.6	1800
J	80	4759	12.0	1605
J	80	4227	13.0	1710
J	80	4227	17.0	2220
J	100	Unique	4.5	1250
J	100	Unique	6.0	1560
J	100	2400	8.0	1050
J	100	2400	11.5	1670
J	115	4227	10.0	1400
J	115	4227	13.5	1760
J	115	2400	8.0	970
J	115	2400	10.8	1555

32-40

J	110	4198	20.5	1850
J	110	4198	24.0	2230
J	110	3031	28.0	2155
J	110	3031	33.0	2245
J	165	HiVel 2	16.0	1050
J	165	HiVel 2	24.2	1750
J	165	2400	9.0	920
J	165	2400	15.1	1600
J	165	Unique	6.0	880

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
32-40 Continued				
J	165	Unique	8.5	1255
J	165	4198	17.0	1460
J	165	4198	21.5	1870
J	165	3031	24.0	1835
J	165	3031	28.0	1955
Lead GC	169	Unique	8.2	1380

7.7 mm JAP

J	110	3031	50.0	3127
J	150	4350	48.0	2575
J	150	HiVel 2	36.0	2225
J	180	4350	44.0	2300
J	180	3031	40.5	2375
J	180	4350	44.0	2350
J	180	3031	45.0	2639

8 mm (7.9 mm) MAUSER

J	125	4895	50.0	2925 (Lot 27277)
J	125	3031	49.0	2943
J	125	4320	53.0	2884
J	154	HiVel 2	25.0	1640
J	154	HiVel 2	33.0	2100
J	154	HiVel 2	42.2	2620
J	154	4198	34.0	2460
J	154	4198	43.5	2905
J	154	3031	45.0	2665
J	154	3031	51.0	2945
J	154	4320	47.0	2660
J	154	4320	56.5	3075
J	170	3031	43.0	2385
J	170	3031	48.0	2600
J	170	HiVel 2	42.0	2600
J	170	4895	47.0	2667 (Lot 27277)
J	170	4320	52.0	2689
J	170	4350	54.0	2510
Lead GC	181	4759	18.0	1649
Lead GC	181	4198	23.0	2304
Lead GC	227	4198	33.0	2070
J	227	4198	39.0	2200
J	227	3031	39.0	2125
J	227	3031	46.5	2440
J	227	4320	39.0	2100
J	227	4320	48.0	2455
J	227	4064	44.0	2240
J	227	4064	50.0	2520
J	236	HiVel 2	18.0	1040
J	236	HiVel 2	28.0	1640
J	236	HiVel 2	38.2	2160
J	236	3031	34.0	1920
J	236	3031	45.5	2390
J	236	4320	38.0	1935
J	236	4320	46.5	2385
J	236	4064	41.0	2125
J	236	4064	49.0	2450

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
33 WINCHESTER				
Lead	190	Unique	16.8	1885
J	200	HiVel 2	20.0	1180
J	200	HiVel 2	43.2	2445
J	200	Unique	15.8	1585
J	200	4198	24.0	1650
J	200	4198	32.0	2140
J	200	3031	37.0	2050
J	200	3031	42.0	2260
J	200	4320	38.0	2000
J	200	4320	44.5	2225
J	200	4064	41.0	2010
J	200	4064	46.0	2260
348 WINCHESTER				
J	150	4198	35.5	2365
J	150	4198	39.8	2590
J	150	3031	50.0	2600
J	150	3031	54.2	2775
J	150	4320	54.0	2640
J	150	4320	58.0	2795
J	150	4064	55.5	2700
J	150	4064	58.5	2835
J	180	4350	63.0	2475
J	180	4350	67.0	2650
J	180	4320	54.0	2325
J	180	4320	58.0	2575
J	180	4064	51.0	2350
J	180	4064	55.0	2525
J	180	3031	47.0	2375
J	180	3031	51.0	2550
Lead GC	200	4759	15.0	1175
Lead GC	200	4759	20.0	1395
Lead GC	200	4759	25.0	1635
J	200	4350	59.0	2359
J	200	4198	34.5	2100
J	200	4198	38.0	2275
J	200	3031	43.0	2200
J	200	3031	49.0	2450
J	200	4320	46.0	2235
J	200	4320	52.0	2470
J	200	4064	48.5	2315
J	200	4064	53.6	2535
J	220	4350	58.0	2250
J	220	4350	62.0	2375
J	220	4320	51.0	2110
J	220	4320	55.0	2275
J	220	4064	48.0	2125
J	220	4064	52.0	2285
35 REMINGTON				
J	150	HiVel 2	26.0	1540
J	150	HiVel 2	40.2	2390
J	150	2400	22.0	1938
J	150	2400	30.3	2465
J	150	Unique	10.0	1505
J	150	Unique	13.9	1870

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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35 REMINGTON *Continued*

J	150	4198	28.0	2050
J	150	4198	36.0	2400
J	150	3031	35.0	1970
J	150	3031	40.5	2230
J	180	4320	41.0	2125
J	180	3031	37.0	2175
J	180	4198	28.0	2050
J	180	HiVel 2	34.0	2075
J	200	HiVel 2	23.0	1280
J	200	HiVel 2	37.2	2140
J	200	2400	20.0	1680
J	200	2400	28.0	2135
J	200	Unique	9.0	1230
J	200	Unique	12.5	1530
J	200	4198	24.0	1700
J	200	4198	32.0	2045
J	200	3031	34.0	1870
J	200	3031	39.0	2130
Lead	206	Unique	8.0	1230
Lead	206	Unique	12.3	1580
J	220	4064	35.5	1780
J	220	3031	34.0	1940

35 WINCHESTER

J	250	HiVel 2	28.0	1370
J	250	HiVel 2	47.0	2345
J	250	Unique	17.7	1560
J	250	4198	30.0	1825
J	250	4198	37.0	2105
J	250	3031	40.0	1935
J	250	3031	49.0	2320
J	250	4320	43.0	1920
J	250	4320	51.5	2250
J	250	4064	44.0	1940
J	250	4064	50.0	2190

358 WINCHESTER

J	180	4320	52.0	2575
J	180	4064	50.0	1825
J	180	3031	49.0	2625
J	180	HiVel 2	50.0	2625
J	220	4064	49.0	2450
J	220	3031	47.0	2475
J	220	HiVel 2	49.0	2500
J	250	4320	47.0	2325
J	250	4064	46.0	2325
J	250	3031	44.0	2350
J	250	HiVel 2	46.0	2450

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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375 H & H MAGNUM

J	235	3031	74.0	2925
J	270	HiVel 2	65.0	2650
J	270	4064	75.0	2750
J	285	4064	71.5	2650
J	285	4320	74.0	2625
J	300	4350	77.5	2610
J	300	4350	81.0	2625
J	300	4320	70.5	2510
J	300	4320	75.0	2610
J	300	4064	56.0	2160
J-	300	4064	63.0	2450
J	300	4350	70.0	2299
J	300	4350	73.0	2410

38 WINCHESTER (38-40)

J	130	2400	18.0	1420
J-	130	2400	26.0	2130
J	130	Unique	11.9	1860
J	130	4227	31.0	2130
J	180	2400	17.0	1450
J	180	2400	22.6	1870
J	180	Unique	8.0	1300
J	180	Unique	10.2	1555
J	180	4227	26.0	1850

38-55

J	255	3031	30.0	1555
J	255	3031	35.0	1820
J	255	HiVel 2	20.0	1070
J	255	HiVel 2	29.0	1645
J	255	Unique	10.6	1755
Lead	275	Unique	9.9	1305

405 WINCHESTER

J	300	3031	52.0	2040
J	300	3031	57.0	2250
J	300	4320	52.0	1905
J	300	4320	62.0	2220
J	300	HiVel 2	30.0	1180
J	300	HiVel 2	53.4	2260
J	300	2400	16.0	900
J	300	2400	34.4	1940
Lead	300	Unique	16.0	1325
Lead	300	Unique	22.6	1705

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
44 WINCHESTER (44-40) RIFLE				
J	200	4227	29.0	1890
J	200	2400	20.0	1385
J	200	2400	25.4	1870
J	200	Unique	9.0	1285
J	200	Unique	11.3	1520
J	200	4759	25.0	1710

45-70 WINCHESTER H. V.

Lead	237	Unique	15.0	1648
Lead	237	Unique	20.8	1972
J	300	HiVel 2	25.0	1080
J	300	HiVel 2	41.0	1700
J	300	HiVel 2	53.4	2165
J	300	Unique	18.7	1685
J	300	3031	48.0	1675
J	300	3031	58.0	2015
J	405	Unique	17.3	1472
J	405	3031	53.0	1827

45-90 WINCHESTER

J	300	4198	57.0	2215
J-	300	3031	64.0	2040
J	300	HiVel 2	38.0	1490
J	300	HiVel 2	46.0	1740
J	300	HiVel 2	54.0	2000
J	405	4198	53.0	1980
J	405	3031	60.0	1950
J	405	HiVel 2	35.0	1290
J	405	HiVel 2	50.0	1785

HODGDON POWDER DATA

(from B. E. Hodgdon, Inc., 7710 W. 63rd St., Merriam, Kansas)

Caliber	Bullet Grs. Weight	Charge Grs.	Velocity
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HODGDON H-240

22 Hornet	45	6.7	2170
218 Bee	45	11.5	2745
218 Bee	45	12.0	2818
222 Remington	50	8.0	1913
22-250	50	11.0	2068
250 Savage	60 Lead GC	10.0	1752
30/06	169 Lead GC	17.5	1739
38 Special	150 Lead	8.0	792
38 Special	150 Lead	10.0	1054
8 mm	165 Lead	20.0	1672
38/40	180	20.0	1990
38/40	180 Lead	20.0	1897
44Special	254 Lead	13.0	1001
44 Magnum	215	23.0	1525
44 Magnum	250	20.0	
45/70	300 Lead	22.0	1222

Caliber	Bullet Grs. Weight	Charge Grs.	Velocity
HODGDON 4895			
222 Remington	45	25	3171
222 Remington	50	24	3028
222 Remington	55	23	2808
219 Wasp	50	28	3312
219 Wasp	55	28	2501
22/250	50	36	3720
22/250	55	35	3560
220 Swift	50	39	4028
220 Swift	55	38	3819
243 Winchester	70	39	3377
243 Winchester	75	38	3219
243 Winchester	85	35	2949
243 Winchester	100	34	2710
244 Remington	70	41	3603
244 Remington	75	40	3484
244 Remington	85	39	3303
244 Remington	100	36	2889
257 Roberts	87	42	3302
257 Roberts	100	38	3029
257 Roberts	117	34	2593
25/06	87	47	3258
270 Winchester	100	50	3345
270 Winchester	130	49	3158
270 Winchester	150	45	2760
30/30	110	30	1872
30/30	110	38	2610
30/30	150	35	2349
30/30	170	30	1888
308 Winchester	100	49	3028
308 Winchester	130	47	2897
308 Winchester	150	45	2691
308 Winchester	180	40	2301
30/06	110	52	3017
30/06	125	55	3197
30/06	150	50.9	2756
30/06	180	47	2588
8 m/m	125	51	2796
8 m/m	150	50	2747
8 m/m	170	46	2501
8 m/m	165 GC	30	1555
35 Remington	200	39	2069

HODGDON 4831

22-250	55	43	3526
243 Winchester	100	44.5	3136
243 Winchester	85	49	3275
243 Winchester	100	46	3009
244 Remington	70	50	3445
244 Remington	85	48	3254
244 Remington	90	47	3134
244 Remington	100	45	2927
257 Roberts	87	54.5	3334
257 Roberts	100	49	2993

Caliber	Bullet Grs. Weight	Charge Grs.	Velocity
HODGDON 4831 (Continued)			
257 Roberts	100	47	2871
257 Roberts	100	45	2762
257 Roberts	117	46	2925
257 Roberts	120	45	2512
250 Savage	100	41	2625
250 Savage	117	38	2601
6.5 Jap Roberts	120	49	2773
6.5 Jap Roberts	120	47	2633
6.5 Jap Roberts	120	45	2512
6.5 Jap Roberts	140	47	2583
6.5 Jap Roberts	140	45	2495
6.5 Jap Roberts	140	43	2367
270 Winchester	100	60	3200
270 Winchester	130	60	3220
270 Winchester	130	59	3143
270 Winchester	130	57	3052
270 Winchester	130	55	2910
270 Winchester	150	58	2935
270 Winchester	150	56	2887
270 Winchester	150	54	2751
30-06	150	60	2760
30-06	180	60	2753
30-06	180	58	2655
30-06	180	56	2550
30-06	200	58	2520
30-06	200	56	2425
30-06	200	54	2322
30-06	220	56	2405
30-06	220	57	2435
300 H. & H. Magnum	180	69	3055
300 H. & H. Magnum	180	67	2968
300 H. & H. Magnum	180	65	2840
300 Weatherby Magnum	180	83	3225
300 Weatherby Magnum	180	81	3135
300 Weatherby Magnum	180	79	3083
7.7 Jap	150	54	
375 H. & H. Magnum	285	86	2502
375 H. & H. Magnum	285	82	2403
375 H. & H. Magnum	285	78	2315

HODGDON 4676

222 Remington	55	26	3061
22-250	55	37.5	3636
244 Remington	70	43	3583
244 Remington	75	42	3463
244 Remington	85	41	3284
25-06	87	53	3608
25-06	87	51.5	3566
257 Roberts	60	46.5	3663
257 Roberts	60	44	3315
270 Winchester	110	53	3350
270 Winchester	130	49.5	3100

Caliber	Bullet Grs. Weight	Charge Grs.	Velocity
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HODGDON 4676 (Continued)

270 Winchester	130	50.5	3130
30/06	150	52	2875
30/06	150	53	2940
30/06	150	54	3030
7 x 57	139	48	3009

HODGDON BALL TYPE C.

218 Bee	45	18	2618
218 Bee	50	18	2544
219 D Wasp	55	30	3390
222 Remington	45	26	3478
222 Remington	45	27	3612
222 Remington	50	26	3408
222 Remington	50	27	3430
222 Remington	55	26	3245
22/250	55	32.5	3252
22/250	55	34	3320
243 Winchester	70	42	3512
244 Remington	70	43	3611
244 Remington	75	41	3489
244 Remington	85	38	3132
244 Remington	90	37	2962
250 Savage	60	38	3562
250 Savage	87	37	3149
250 Savage	87	33	2844
250 Savage	100	32	2769
270 Winchester	100	53	3476
270 Winchester	130	49	2990
7 x 57 mm	139	42	2609
30/30 Winchester	110	40	2822
30/30 Winchester	170	32	1997
30/30 Winchester	170	34	2131
308 Winchester	110	48	3039
308 Winchester	110	51	3193
308 Winchester	110	52	3202
308 Winchester	125	47	2910
308 Winchester	150	45	2679
308 Winchester	150	46	2721
308 Winchester	150	47	2772
308 Winchester	150	48	2826
308 Winchester	180	40	2298
308 Winchester	180	42	2427
308 Winchester	180	43.5	2509
308 Winchester	180	45	2557
30/40	110	45	2888
30/40	125	42	2592
30/40	169 Lead GC	33	1849
30/40	180	35	1998
30/40	220	32.5	1731
30/06	125	55	3186
30/06	180	45	2468
30/06	180	47	2481

Caliber	Bullets Grs. Weight	Charge Grs.	Velocity
HODGDON BALL TYPE C. (Continued)			
30/06	150	52	2827
7.7 Jap	150	44	2590
8 mm	125	57	3146
8 mm	150	55	2994
8 mm	170	52	2583
38/40	180	35	1640
220 Swift	55	37	3620
257 Roberts	100	41	2941
7 x 57	160	36	2242
30/30	150	37	2408
300 Savage	125	45	2938
300 Savage	150	43.5	2680
348 Winchester	200	52	2443
35 Whelen	275	52	2309

Table of Revolver Charges

Do not use this table until you have read the Sections of this Handbook entitled "Gunpowder" (Page 30), "How to Develop the Powder Charge" (Page 35), and "Indications of Excessive Pressure" (Page 35).

Table of Revolver Charges

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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25 COLT AUTOMATIC

MC	50	Bullseye	1.4	750
MC	50	Unique	2.0	740

30 LUGER (7.65 m/m)

MC	93	Bullseye	4.0	1175
MC	93	5066	4.3	1175
MC	93	Unique	5.0	1250

32 COLT AUTO

MC	71	Bullseye	2.3	967
Lead	77	Bullseye	2.2	975
Lead	77	5066	2.5	950
Lead	77	Unique	3.3	1000
MC	74	Unique	3.3	975

32 S & W

Lead	85	Bullseye	1.4	725
Lead	87	5066	1.3	700
Lead	87	Unique	2.0	825

32 S & W LONG—32 COLT NEW POLICE (Police Positive)

Lead	98	Bullseye	2.0	800
Lead	98	Unique	3.0	725
Lead	98	Bullseye	2.7	910
Lead	98	5066	2.5	700
Lead	98	Unique	4.3	1000

32 WINCHESTER (32-20) REVOLVER

MC	80	Bullseye	4.2	1175
MC	80	5066	6.4	1250
MC	80	Unique	5.9	1225
Lead	100	Bullseye	3.4	970
Lead	100	5066	4.8	1000
Lead	100	Unique	5.5	1075
Lead	115	Bullseye	3.1	850
Lead	115	5066	4.6	900
Lead	115	Unique	4.5	925

Table of Revolver Charges *Continued*

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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357 MAGNUM—STANDARD LOADS

Lead	115	Bullseye	5.0	1340
Lead	115	Unique	5.5	1175
Lead	148	Bullseye	4.1	1050
Lead	148	Unique	6.2	1275
Lead	148	2400	12.0	1350
Lead GC	158	5066	5.3	1100
Lead GC	158	Unique	6.0	1210
Lead	158	Bullseye	3.5	950
Lead	158	Unique	5.0	1050

357 MAGNUM—HIGH POWER LOADS

Lead GC	150	Unique	8.5	1500
Lead GC	150	2400	16.0	1600
Lead GC	150	4759	13.0	1300
Lead GC	150	4227	15.0	1400
Lead GC	160	Unique	7.0	1325
Lead GC	160	2400	15.0	1550
Lead GC	158	2400	15.5	1525

Caution: The above high power loads for use in Heavy Frame Guns only in good mechanical condition.

9 m/m LUGER

Lead	123	Bullseye	4.8	1125
Lead	123	5066	5.5	1100
Lead	123	Unique	6.0	1300

38 COLT AUTO

Lead	125	Unique	7.0	1270
Lead	125	Bullseye	4.0	1100
Lead	125	5066	4.7	1000
MC	130	Bullseye	5.0	1275
MC	130	5066	5.0	1050
MC	130	Unique	7.7	1310
MC	130	Bullseye	4.6	1200
MC	130	Unique	4.7	875

Table of Revolver Charges *Continued*

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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38 SPECIAL—STANDARD LOADS

Lead	148	Bullseye	3.5	950
Lead	148	5066	5.0	950
Lead	148	Unique	5.0	1000
Lead	148	Bullseye	2.7	750
Lead	148	5066	3.2	750
Lead	148	Unique	3.5	725
Lead	158	Bullseye	3.6	860
Lead	158	5066	3.8	750
Lead	158	Unique	4.5	850
Lead GC	158	Bullseye	3.3	825
Lead GC	158	5066	4.8	950
Lead GC	158	Unique	5.2	975
Lead	160	5066	5.0	950
Lead	160	Unique	4.5	850

38 SPECIAL—HIGH POWER LOADS

Lead GC	150	Unique	6.4	1150
Lead GC	150	2400	13.5	1225
Lead	158	2400	13.5	1220
Lead	160	2400	12.0	1200

Caution: The above high power loads for use in Heavy Frame Guns only in good mechanical condition.

380 AUTO

MC	95	Bullseye	2.5	800
MC	95	Unique	4.0	900
MC	95	5066	3.0	900
Lead	107	Bullseye	2.7	900
Lead	107	5066	3.3	900
Lead	107	Unique	4.5	975

38-40 REVOLVER

MC	180	Bullseye	4.0	700
MC	180	Bullseye	5.9	980
MC	180	5066	8.0	1000
MC	180	Unique	7.0	825
MC	180	Unique	10.0	1100

Table of Revolver Charges *Continued*

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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41 COLT LONG

Lead	195	Bullseye	3.0	700
Lead	195	5066	4.1	725
Lead	195	Unique	5.0	900
Lead	200	Bullseye	3.0	700
Lead	200	5066	4.1	725
Lead	200	Unique	5.0	875

44 S & W RUSSIAN

Lead	175	Bullseye	3.0	800
Lead	175	5066	6.0	1000
Lead	175	Unique	7.0	1100
Lead	246	Bullseye	3.0	625
Lead	246	5066	5.2	750
Lead	246	Unique	6.0	800

44 SPECIAL

Lead	173	Bullseye	6.8	1050
Lead	173	5066	7.0	1075
Lead	173	Unique	10.3	1175
Lead	231	Bullseye	5.3	875
Lead	231	5066	6.9	900
Lead	231	Unique	8.1	1000
Lead	246	Bullseye	5.1	800
Lead	246	5066	6.8	875
Lead	246	Unique	7.8	925
Lead	250	Bullseye	4.9	800
Lead	250	5066	6.8	800
Lead	250	Unique	7.8	975

44 MAGNUM

Prot-X-Bore	158	2400	24.0	1850
Prot-X-Bore	158	Unique	9.5	1300
Prot-X-Bore	170	Unique	9.0	1250
Prot-X-Bore	170	2400	23.5	1800
Prot-X-Bore	220	2400	21.0	1600
Jugular	220	2400	26.0	1700
Jugular	220	Unique	14.0	1475

NOTE: Prot-X-Bore is a zinc base bullet; Jugular is a jacketed bullet. These bullets are manufactured by Lakeville Arms Co., Lakeville, Conn.

Table of Revolver Charges *Continued*

Bullet	Grs. Weight	Powder Kind	Charge Grs.	Velocity
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44-40 REVOLVER

Lead	175	Bullseye	6.0	900
Lead	175	Unique	9.0	950
Lead	175	Bullseye	9.0	1100
Lead	175	Unique	11.9	1200
Lead	210	Bullseye	5.0	775
Lead	210	5066	8.0	1000
Lead	210	5066	7.0	875
Lead	210	Unique	8.0	825
Lead	210	Unique	10.7	1050
Lead	250	Bullseye	6.2	850
Lead	250	Unique	7.0	780
Lead	250	Unique	9.1	940

45 AUTO RIM

Lead	237	Bullseye	4.0	800
Lead	237	5066	4.0	600
Lead	237	Unique	6.0	800
MC	230	Bullseye	4.0	700
MC	230	5066	5.4	800
MC	230	Unique	6.5	750

45 A. C. P.

Lead	200	Bullseye	4.7	900
Lead	200	5066	6.6	900
Lead	200	Unique	7.6	975
MC	230	Bullseye	4.9	825
MC	230	5066	6.0	825
MC	230	Unique	7.7	875

45 COLT

Lead	180	Bullseye	6.0	900
Lead	180	Bullseye	7.8	1100
Lead	180	5066	7.0	850
Lead	180	5066	8.5	1025
Lead	180	Unique	9.0	925
Lead	180	Unique	11.8	1200
Lead	250	Bullseye	6.7	850
Lead	250	Bullseye	7.7	900
Lead	250	5066	7.2	825
Lead	250	5066	8.5	925
Lead	250	Unique	8.0	850
Lead	250	Unique	10.3	1025

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